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GV-Hot Swap Surveillance System V5 (Rev. B)

User's Manual

User's Manual for GV-Hot Swap Surveillance System V5 (Rev. B)

Welcome to the *GV-Hot Swap Surveillance System V5 (Rev. B) User's Manual.*

The Manual provides an overview of the 3U / 4U GV-Hot Swap Surveillance System V5 and its accessories. It also includes the instructions to guide you through the installation and use of the GV-Hot Swap Surveillance System V5:

- **Chapter 1, Introduction**

  Identifies the GV-Hot Swap Surveillance System V5 's accessories and options.

- **Chapter 2, Overview**

  Identifies the GV-Hot Swap Surveillance System V5 's components.

- **Chapter 3, Getting Started**

  Provides step-by-step instructions on setting up the GV-Hot Swap Surveillance System V5.

- **Chapter 4, DVR Health Analysis**

  Introduces how to collect data to obtain the service of DVR health analysis from GeoVision.

- **Chapter 5, Troubleshooting**

  Suggests courses of action if the GV-Hot Swap Surveillance System V5 doesn't seem to be working properly.

Contents

Notice

1. The **back panel** of GV-Hot Swap Surveillance System V5 is subject to change without prior notice.

2. For the users of **GV-Hot Swap DVR/NVR System** and **GV-Hot Swap VMS System**, please see the User's Manual for the hardware introduction and installation, and see the *GV-DVR User's Manual and GV-VMS User's Manual* for the software operation.

3. For the users of **GV-Hot Swap Recording Server System**, please see the User's Manual for the hardware introduction and installation, and see the *GV-Recording Server User's Manual* for the software operation.

4. For the users of **GV-Hot Swap Backup Center System**, please see the User's Manual for the hardware introduction and installation, and see the *GV-Backup Center User's Manual* for the software operation.

5. You can access the **digital copies of User's Manuals and Quick Start Guides** from the system. For GV-Hot Swap DVR/NVR System V5 / GV-Hot Swap VMS System, go to GV-Desktop, click the Program button and select User Manual. For GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System, the documentation is saved at C:\User Manual.

Safety Instructions

⚠️ Observe these safety instructions to help ensure against injury to yourself and damage to the product.

● **Read** all safety and installation instructions before you operate the product.

● **Do not operate** the product in high humidity areas or expose it to water or moisture.

● **Do not put** the product in an unstable, a slanting or vibrated place.

● **Do not block** any ventilation opening.

● **Do not install** the product near any heat sources such as radiator, heat register or other apparatus that produce heat.

● **Operate** the product using only the type of power source indicated on the marking label.

● **Do not defeat** the safety purpose of the grounding-type plug. A grounding plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

● **Do not overload** wall outlets or extension cords, as this may cause fire or electric shock.

● **Do not use** the product when abnormality occurs, such as emitting smoke from the product, smelling burning, being damaged by drop, invasion of foreign objects inside the product, etc. Be always sure to remove the AC adaptor at once and contact your dealer.

● **Do not use** accessories or attachments not recommended by the manufacturer, as they may cause hazards and void the warranty.

● **Do not attempt** to service the product yourself, as removing the casing may expose you to dangerous voltage and void the warranty.

Chapter 1 Introduction

1.1 Models

The 3U / 4U GV-Hot Swap Surveillance System V5 has the following models:

GV-SDI-204H V5	- 4 / 8 / 12-channel digital video recorder - 4-Ch: Records up to 120 (NTSC) / 100 (PAL) fps at 1080p resolution - 8-Ch: Records up to 240 (NTSC) / 200 (PAL) fps at 1080p resolution - 12-Ch: Records up to 360 (NTSC) / 300 (PAL) fps at 1080p resolution - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays - Only 3U (8-bay) models support up to 12 channels.
GV-5016H V5	- 16 / 32-channel digital video recorder - 16-Ch: Records up to 480 (NTSC) / 400 (PAL) fps at D1 resolution - 32-Ch: Records up to 960 (NTSC) / 800 (PAL) fps at D1 resolution - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
GV-3008H V5	- 8 / 16-channel digital video recorder - 8-Ch: Records up to 240 (NTSC) / 200 (PAL) fps at D1 resolution - 16-Ch: Records up to 480 (NTSC) / 400 (PAL) fps at D1 resolution - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
GV-1480H V5	- 16 / 32-channel digital video recorder - 16-Ch: Records up to 480 (NTSC) / 400 (PAL) fps at CIF resolution - 32-Ch: Records up to 960 (NTSC) / 800 (PAL) fps at CIF resolution - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
GV-1240H V5	- 16 / 32-channel digital video recorder - 16-Ch: Records up to 240 (NTSC) / 200 (PAL) fps at CIF resolution - 32-Ch: Records up to 480 (NTSC) / 400 (PAL) fps at CIF resolution - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
GV-1120H V5	- 16 / 32-channel digital video recorder - 16-Ch: Records up to 120 (NTSC) / 100 (PAL) fps at CIF resolution - 32-Ch: Records up to 240 (NTSC) / 200 (PAL) fps at CIF resolution - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays

GV-900H V5	- 16 / 32-channel digital video recorder - 16-Ch: Records up to 240 (NTSC) / 200 (PAL) fps at CIF resolution - 32-Ch: Records up to 480 (NTSC) / 400 (PAL) fps at CIF resolution - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
GV-800H V5	- 16 / 32-channel digital video recorder - 16-Ch: Records up to 120 (NTSC) / 100 (PAL) fps at CIF resolution - 32-Ch: Records up to 240 (NTSC) / 200 (PAL) fps at CIF resolution - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
Integrated Model	**4U (20-bay) / 3U (16-bay)** - Supports up to one GV-SDI-204 Card with one GV-Capture Card (GV-5016 / GV-1480B /GV-1240B / GV-1120B / GV-900A / GV-800B) **3U (8-bay)** - Supports up to two GV-SDI-204 Cards with one GV-Capture Card (GV-5016 / GV-1480B /GV-1240B / GV-1120B / GV-900A / GV-800B)
GV-NVRH V5	**NVR (GV)** - 32-channel digital video recorder - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays - Extends compatibility to GeoVision IP Devices only **NVR** - 32-channel GeoVision IP Devices and 1 / 2 / 4 / 6 / 8 / 10 / 12 / 14 / 16 / 18 / 20 / 22 / 24 / 26 / 28 / 30 / 32-channel third-party IP devices digital video recorder - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
GV-VMSH V5 / GV-VMSH Pro	**GV-VMSH V5 (GV)** - 32-channel digital video recorder - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays - Extends compatibility to GeoVision IP Devices only **GV-VMSH V5** - up to 32-channel GeoVision IP Devices and third-party IP devices digital video recorder - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive Bays

	GV-VMSH Pro V5 (GV) - 64-channel digital video recorder - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays - Extends compatibility to GeoVision IP Devices only **GV-VMSH Pro V5** - up to 64-channel GeoVision IP Devices and third-party IP devices digital video recorder - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive Bays
GV-Hot Swap Recording Server System	- Receives and records up to 128 IP channels - Distributes up to 300 IP channels - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
GV-Hot Swap Backup Center System	- Supports up to 200 units of GV-System and GV-IP Devices - Has the options of 4U (20-bay) and 3U (16 / 8-bay) hot-swap SATA drive bays
Note: A dongle is internally inserted in GV-SDI-204H V5, GV-5016H V5, GV-NVRH V5, Integrated Model, GV-VMS, GV-Hot Swap Recording Server System and GV-Hot Swap Backup Center System.	

![GeoVision logo]

1.2 Packing List

The GV-Hot Swap Surveillance System V5 package includes the following items. If any of the items are missing or damaged, contact your dealer to arrange a replacement.

Important: Please keep the original carton and all packing materials for future shipping need.

1.2.1 GV-Hot Swap DVR/NVR System V5

1. GV-Hot Swap DVR/NVR System V5 x 1

2. Video and Audio Cable

GV-5016H V5 (32-Ch)	GV-5016H V5 (16-Ch)
• LFH Video and Audio Cable x 2	• LFH Video and Audio Cable x 1
GV-3008H V5 (16-Ch)	**GV-3008H V5 (8-Ch)**
• D-Type Video and Audio Cable x 4	• D-Type Video and Audio Cable x 2
GV-1480H / 1240H / 1120H V5 (32-Ch)	**GV-1480H / 1240H / 1120H V5 (16-Ch)**
• DVI Video Cable x 2	• DVI Video Cable x 1
• DVI Audio Cable x 2	• DVI Audio Cable x 1

GV-900H V5 (32-Ch)	GV-900H V5 (16-Ch)
• DVI Video and Audio Cable x 4	• DVI Video and Audio Cable x 2
GV-800H V5 (32-Ch)	**GV-800H V5 (16-Ch)**
• DVI Video and Audio Cable x 2	• DVI Video and Audio Cable x 1

3. AC Power Cord x 1

5. GV-IR Remote Control x 1

4. GV-Keyboard Package x1

6. Self-Stick Rubber Pad x 4

7. Quick Start Guide x 1

Note: Keyboard package is not included for 3U (16 / 8-bay) of GV-3008H V5 models, but it could be purchased as an optional accessory.

1.2.2 GV-Hot Swap VMS System V5

1. GV-Hot Swap VMS System V5 x 1

2. AC Power Cord x 1

3. GV-Keyboard Package x 1

4. GV-IR Remote Control x 1

5. Self-Stick Rubber Pad x 4
6. Quick Start Guide x 1

1.2.3 GV-Hot Swap Recording Server / Backup Center System

1. GV-Hot Swap Recording Server / Backup Center System x 1
2. AC Power Cord x 1
3. Self-Stick Rubber Pad x 4
4. Quick Start Guide x 1

1.3   Software License

The following Maximum License is available as a paid service. The license is based on your requirements for the number of connection channels. The USB dongle for software license will be inserted to the system before shipment.

1.3.1 GV-Hot Swap DVR/NVR System V5

Free License	32 channels from GV-IP Devices
Maximum License	32 channels from third-party IP devices
Increment for Each License	1 to 32 third-party IP cameras at an increment of 2
Optional Combinations	N/A
Dongle Type	Internal

1.3.2 GV-Hot Swap VMS System V5

Free License	32 channels from GV-IP Devices	
Maximum License	64 channels from third-party IP devices	
Increment for Each License	**GV IP Devices Only**	GV-VMS Pro license required, 32 ch per license
	GV + 3rd-Party IP Devices	2 licenses required for up to 64 channels: • **GV-VMS Pro** license, 32 ch per license. • **3rd-Party** license, in increments of 1 ch.
Optional Combinations	N/A	
Dongle Type	Internal	

1.3.3 GV-Hot Swap Recording Server System

Free License	N/A
Maximum License	128 channels
Increment for Each License	1. **GV-IP video devices only**: 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100, 104, 108, 112, 116, 120, 124, 128 IP channels. 2. **Third-party IP devices (Includes GV-IP video devices)**: 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100, 104, 108, 112, 116, 120, 124, 128 IP channels.
Optional Combinations	N/A
Dongle Type	Internal

1.4   Recommended Hard Disks

For system efficiency, we recommend the following enterprise level hard disk drives. Avoid using desktop level or green HDD which may affect system efficiency.

- WD RE series
- Seagate Constellation ES.3 series
- HGST Ultrastar series

1.5 Options

Optional devices can expand your GV-Hot Swap Surveillance System V5 's capabilities and versatility. For details on combining options for your system, see *Appendix C. Combining Optional Accessories.*

GV-Video Loop Through Card	This card can take the video signal from the GV-Hot Swap Surveillance System V5 and then split it into 16 signals while maintaining video quality. It can meet the need for multiple spot monitors. ** This device is not available for GV-SDI-204H V5, GV-5016H V5, GV-900H V5 and GV-800H V5 models and GV-Hot Swap VMS System V5.
GV-IO 12-In Card	With 12-point digital inputs, this card can expand the GV-Hot Swap Surveillance System V5 up to 16 sensor inputs.
GV-IO 12-Out Card	With 12-point relay outputs, this card can expand the GV-Hot Swap Surveillance System V5 up to 16 alarm outputs.
GV-Data Capture V3 Box	GV-Data Capture V3 Box can integrate the GV-Hot Swap Surveillance System V5 to an electronic POS system, while GV-Data Capture V3E Box can establish such integration through LAN or Internet. **This device is not supported by GV-Hot Swap VMS System V5 / Recording Server / Backup Center System.
GV-Hub V2	An easy way for serial port extension. This hub can add 4 RS-232/RS-485 serial ports through the GV-Hot Swap Surveillance System V5 's USB port.
GV-COM V2	This unit can add 1 RS-232/RS-485 serial port through the GV-Hot Swap Surveillance System V5's USB port.
GV-IO Box (4 Ports)	GV-IO Box 4 provides 4 inputs and 4 relay outputs, and supports both DC and AC output voltages. A USB port is also provided for PC connection.
GV-IO Box (8 Ports)	GV-IO Box 8 provides 8 inputs and 8 relay outputs, and supports both DC and AC output voltages. A USB port is also provided for PC connection.
GV-IO Box (16 Ports)	GV-IO Box 16 provides 16 inputs and 16 relay outputs, and supports both DC and AC output voltages. A USB port is also provided for PC connection.

GV-Joystick	GV-Joystick facilitates the PTZ camera control. It can be either plugged into the GV-Hot Swap Surveillance System V5 for independent use or connected to GV-Keyboard to empower the operation. However, this device can only work on GV-System version 8.2 or later.
GV-Keyboard V3	The GV-Keyboard V3 is designed to program and operate GV-System and GV-VMS, and it can also be connected with PTZ cameras directly for PTZ control. ** This device is a standard package item, except 3U (16 / 8-bay) models of 3008H V5.
Graphic Card	The Graphic Card comes with HDMI, DVI-D, and VGA ports to support additional displays. The number of monitors supported varies based on models and combination of optional cards. Up to 5-7 monitors can be supported. For details, see *3.13.5 Graphic Cards*. ** Currently, these models do not support optional Graphic Cards: • GV-3008H V5 • 4U (20-bay) and 3U (16-bay) models with 2 built-in GV-Capture Cards • 3U (8-bay) models with 2 built-in GV-1480 / 1240 / 1120 Cards or 3 built-in GV-SDI-204 Cards
Gigabit Network Card	The Gigabit Network Card can support 2 gigabit ports. The number of gigabit ports supported varies based on models and combination of optional cards. Up to 5 gigabit ports can be supported. For details, see 3.13.6 Gigabit Network Cards. ** Currently, these models do not support optional Gigabit Network Cards: • GV-3008H V5 • 4U (20-bay) and 3U (16-bay) models with 2 built-in GV-Capture Cards or 3 built-in GV-SDI-204 Cards
RAID Card	The RAID Card supports a maximum of 20 SATA hard drives and enhances data protection. The supported RAID types include RAID 0, RAID 1, RAID 5, RAID 6, RAID 00, RAID 10, RAID 50 and RAID 60. ** Currently, these models do not support optional RAID Card: • GV-3008H V5 • All models with 2 built-in GV-1480 / 1240 / 1120 Cards

	The Redundant Power Supply comes with 2 hot-swap modules for 3U models and 3 hot-swap modules for 4U models. When 1 module is down, the remaining module(s) can still supply full power to the system. For details, see *3.13.7 Redundant Power Supply*.
Redundant Power Supply	
	- 3U models: 600 W 1+1 mode; 100 ~ 240 V, 47-63 Hz
	- 4U models: 1000 W N+1 mode; 100 ~ 240 V, 47-63 Hz

Note:

1. The GV-IO 12-In and GV-IO 12-Out Cards must work and be purchased together.

2. The optional accessories will be built in the GV-Hot Swap Surveillance System V5 (Rev. B) and tested before shipment. Opening the case and installing the accessories yourself will void the warranty.

3. The optional accessories are only supported in GV-Hot Swap Surveillance System V5 (Rev. B) or later.

Chapter 2   Overview

2.1   Front View

2.1.1   4U (20 Bay) Models
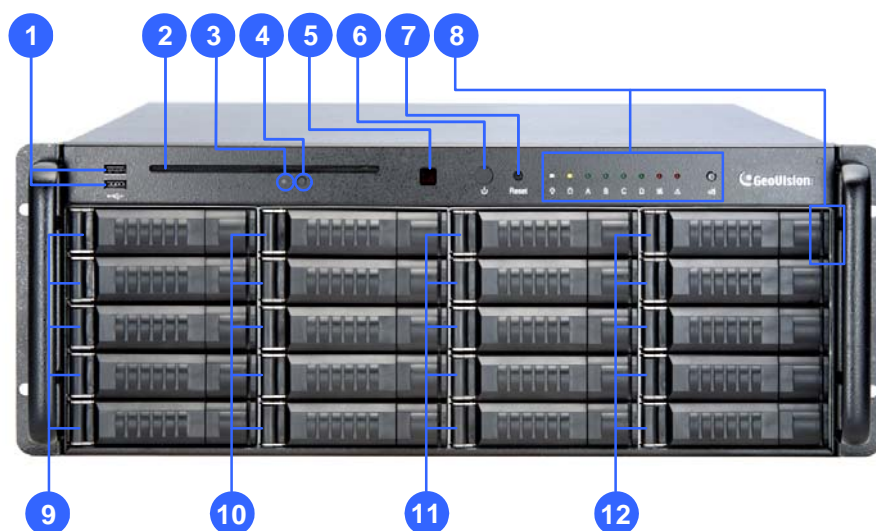
Figure 2-1

No.	Name	No.	Name
1	USB Port x 2	7	Reset Button
2	DVD(±) RW Drive	8	LED Panel (See *2.2 LED Panel View* for details.）
3	DVD(±) RW Drive Activity LED	9	HDD Group A
4	DVD-eject button	10	HDD Group B
5	Built-in GV-IR Remote Control Receiver	11	HDD Group C
6	Power Button	12	HDD Group D

2.1.2 3U (16 / 8-Bay) Models

2.1.2.1 16-Bay Models
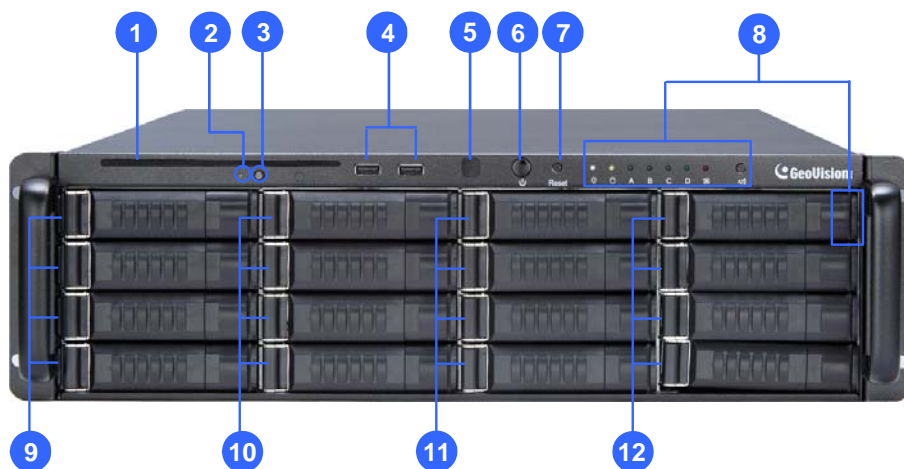
Figure 2-2

No.	Name	No.	Name
1	DVD(±) RW Drive	7	Reset Button
2	DVD(±) RW Drive Activity LED	8	LED Panel (See *2.2 LED Panel View* for details.）
3	DVD-eject button	9	HDD Group A
4	USB Port x 2	10	HDD Group B
5	Built-in GV-IR Remote Control Receiver	11	HDD Group C
6	Power Button	12	HDD Group D

2.1.2.2 8-Bay Models
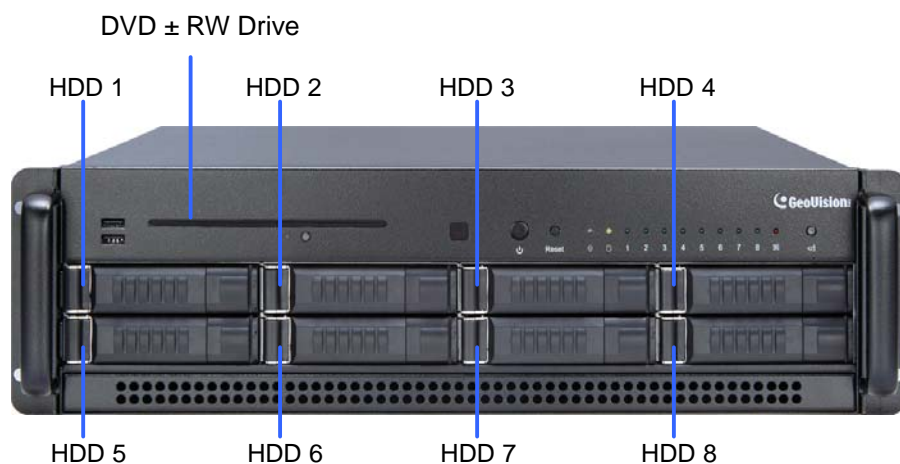
Figure 2-3

For details on the other features of the front panel, see Figure 2-2.

2.2 LED Panel View

A LED panel on the front door provides a quick indication of the activity status of hard disk drives. Note the panel design and function vary from model to model.

2.2.1 4U (20-Bay) / 3U (16-Bay) Models
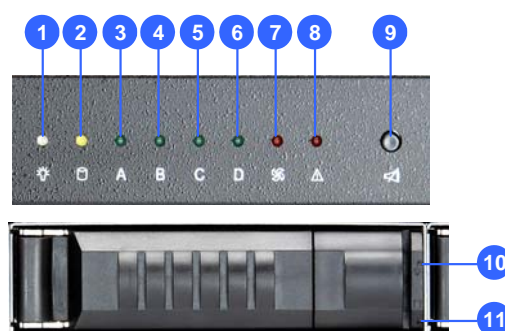
Figure 2-4

No.	LED	Description
1	Power LED	The LED shines when the power is on.
2	HDD Activity LED	The LED shines when the HDDs are writing or reading data.
3	HDD Group A LED	The LEDs of HDD Group A to D shine when the power is on.
4	HDD Group B LED	
5	HDD Group C LED	
6	HDD Group D LED	
7	System Alert LED	The LED shines and the system sounds on if one fan stops or the GV-Hot Swap Surveillance System V5 is overheated.
8	Alert LED	(reserved)
9	Alarm Mute Button	Press this button to silence the alarm when the System Alert LED shines and the system sounds.
10	HDD Power LED (White)	The LED shines white after the HDD is installed.
11	HDD Activity LED (Blue)	The LED shines blue if the HDD is reading or writing data.

Note: The HDD Activity LED (No.11) only shines if the installed HDD is SATA II.

2.2.2 3U (8-Bay) Models
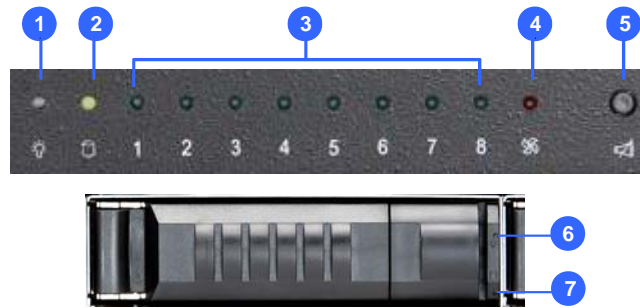
Figure 2-5

No.	LED	Description
1	Power LED	The LED shines when the power is on.
2	HDD Activity LED	The LED shines when the HDDs are writing or reading data.
3	HDD 1 ~ 8 LEDs	The LEDs of HDD 1 ~ 8 shine when the power is on.
4	System Alert LED	The LED shines and the system sounds on if one fan stops or the GV-Hot Swap Surveillance System V5 is overheated.
5	Alarm Mute Button	Press this button to silence the alarm when the System Alert LED shines and the system sounds.
6	HDD Power LED (White)	The LED shines white after the HDD is installed.
7	HDD Activity LED (Blue)	The LED shines blue if the HDD is reading or writing data.

Note: The HDD Activity LED (No.7) only shines if the installed HDD is SATA II.

2.3   Rear View

2.3.1   4U (20-Bay) Models

2.3.1.1   GV-SDI-204H V5
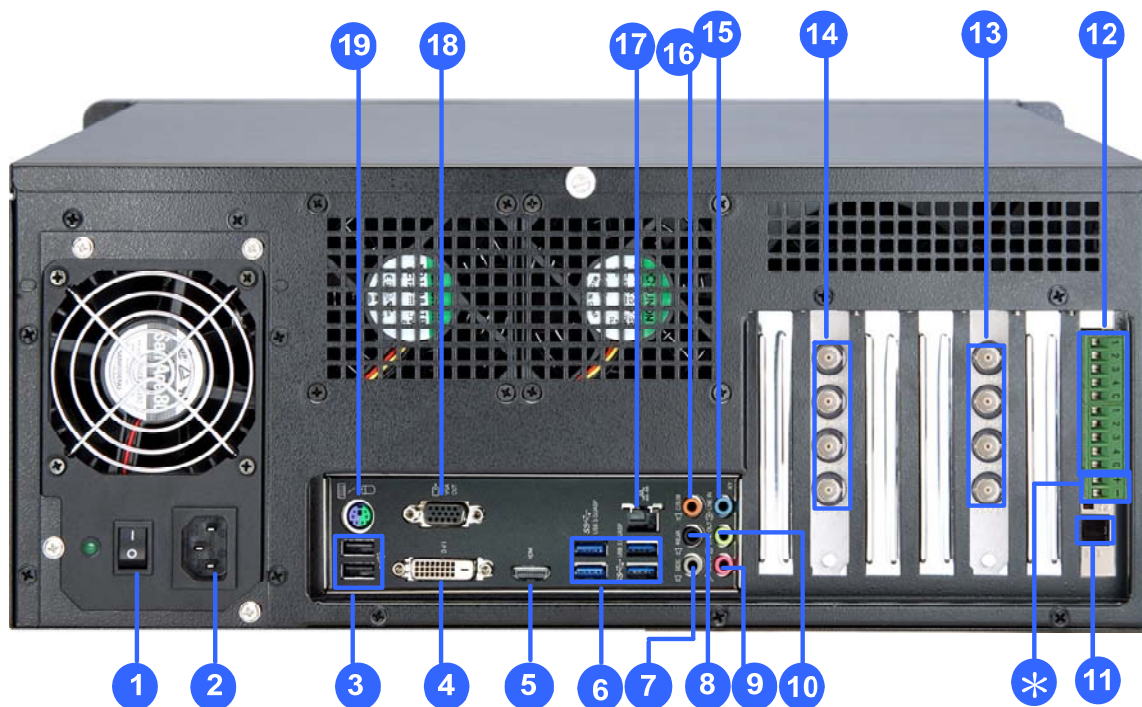
Figure 2-6

No.	Name	No.	Name
1	AC Power Switch	11	RJ-11 Port
2	AC Power Input (Full Range)	12	I/O Terminal Block
3	USB 2.0 Port x 2	13	BNC Video 5-8 (For 8-Ch Model Only)
4	DVI-DL Output (DVI-D Signal Only)	14	BNC Video 1-4
5	HDMI Port	15	Audio Line In Port
6	USB 3.0 Port x 4	16	Center / Subwoofer Port
7	Side R/L Port	17	Gigabit Ethernet Port
8	Rear R/L Port	18	VGA Monitor Output
9	Audio Microphone In Port	19	PS/2 Keyboard or Mouse
10	Audio Line Out Port	∗	The RS-485± ports are not functional on GV-SDI-204H V5.

Note: To connect two monitors, use ports No. 4, No. 5 or No. 18. The DVI-DL output (No. 4) only supports the digital signal, and it can be only connected to a monitor with a DVI connector.

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2.3.1.2   GV-5016H V5

Figure 2-7

No.	Name
1	D-Type Audio and Video 1-16
2	D-Type Audio and Video 16-32 (For 32-Ch Model Only)
3	I/O Terminal Block
4	RJ-11 Port
$*$	The RS-485$\pm$ ports are not functional on GV-5016H V5.

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-6.

2.3.1.3   GV-3008H V5
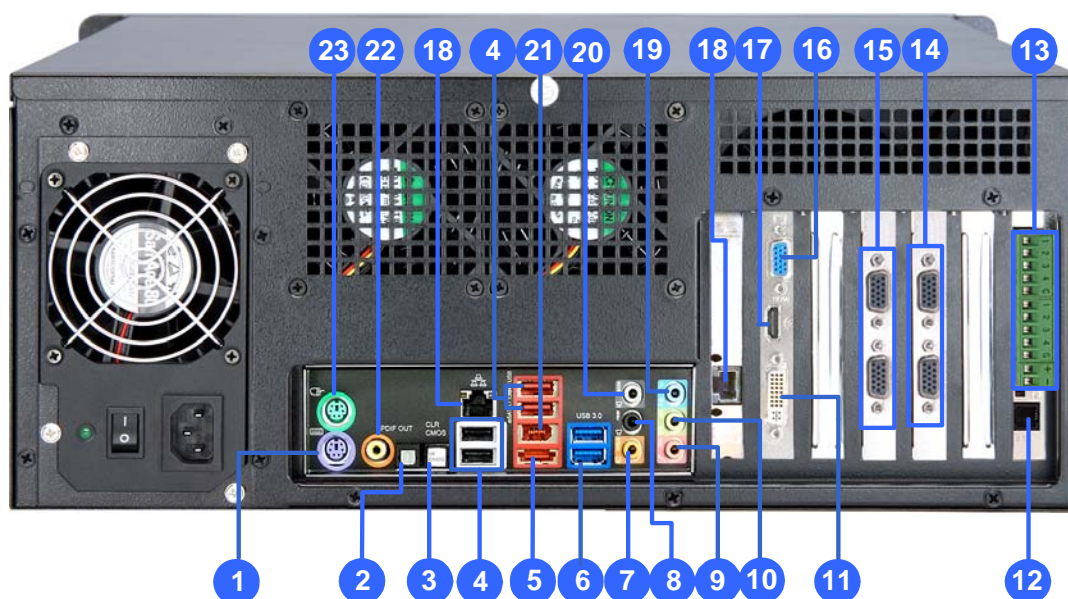
Figure 2-8

No.	Name	No.	Name
1	PS/2 Keyboard Port	13	I/O and RS-485± Terminal Block
2	S/PDIF Port	14	I D-Type Audio and Video 9-16 (For 16-Ch Model Only)
3	Clear CMOS Switch	15	D-Type Audio and Video 1-8
4	USB 2.0 Port x 4	16	VGA Monitor Output
5	eSATA	17	HDMI Port
6	USB 3.0 Port x 2	18	Gigabit Ethernet Port x 2
7	Center / Subwoofer Port	19	Audio Line In Port
8	Rear R/L Port	20	Side R/L Port
9	Audio Microphone in Port	21	IEEE 1394 Port
10	Audio Line Out Port	22	S/PDIF Port
11	DVI-DL Output (DVI-D Signal Only)	23	PS/2 Mouse Port
12	RJ-11 Port		

For details on power supply on the rear panel, see Figure 2-6.

2.3.1.4 GV-1480H / GV-1240H / GV-1120H V5

Figure 2-9

No.	Name
1	DVI Video 1-16, DVI Audio 1-16
2	DVI Video 17-32, DVI Audio 17-32 (For 32-Ch Model Only)
3	I/O and RS-485± Terminal Block
4	RJ-11 Port

For details on other features of the motherboard and power supply on the rear panel, see Figure 2-6.

2.3.1.5   GV-900H V5

Figure 2-10

No.	Name
1	DVI Video 1-16 with Audio 1-8
2	DVI Video 17-32 with Audio 17-24 (For 32-Ch Model Only)
3	I/O and RS-485± Terminal Block
4	RJ-11 Port

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-6.

2.3.1.6   GV-800H V5

Figure 2-11

No.	Name
1	DVI Video 1-16 and Audio 1-4
2	DVI Video 17-32 and Audio 17-20 (For 32-Ch Model Only)
3	I/O and RS-485± Terminal Block
4	RJ-11 Port

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-6.

2.3.1.7   GV-NVRH V5 / GV-VMSH V5

Figure 2-12

No.	Name
1	Gigabit Ethernet Port
2	I/O Terminal Block
3	RJ-11 Port
∗	The RS-485± ports are not functional on GV-NVRH V5 / GV-VMSH V5.

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-6.

2.3.1.8 GV-Hot Swap Recording Server System

Gigabit Ethernet Port
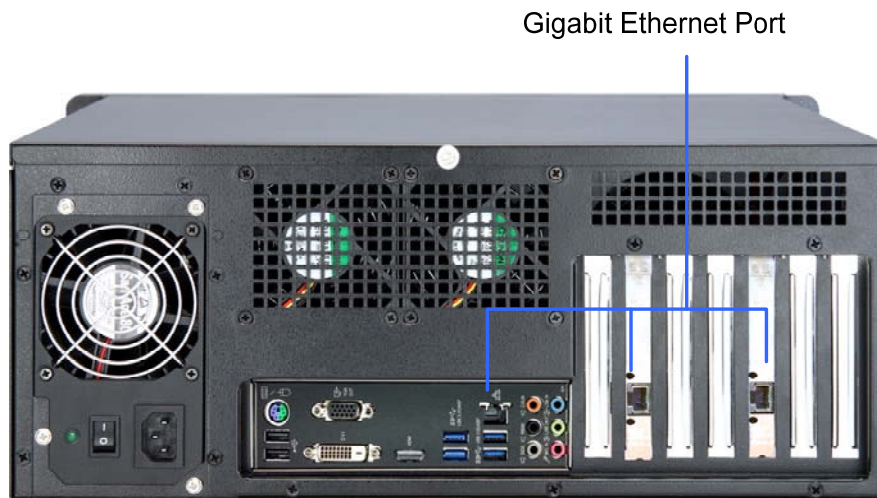
Figure 2-13

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-6.

2.3.1.9 GV-Hot Swap Backup Center System

Gigabit Ethernet Port
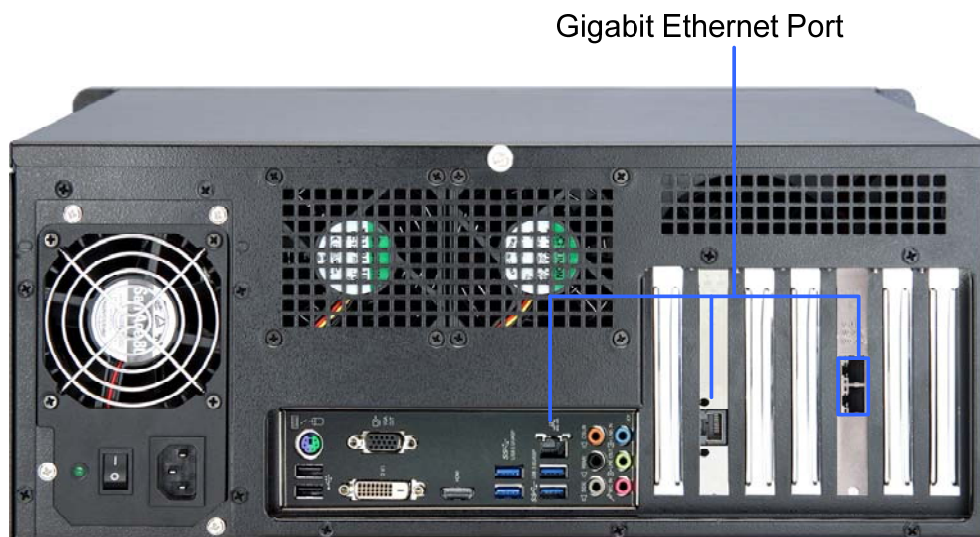
Figure 2-14

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-6.

2.3.2   3U (16 / 8-Bay) Models

2.3.2.1   GV-SDI-204H V5
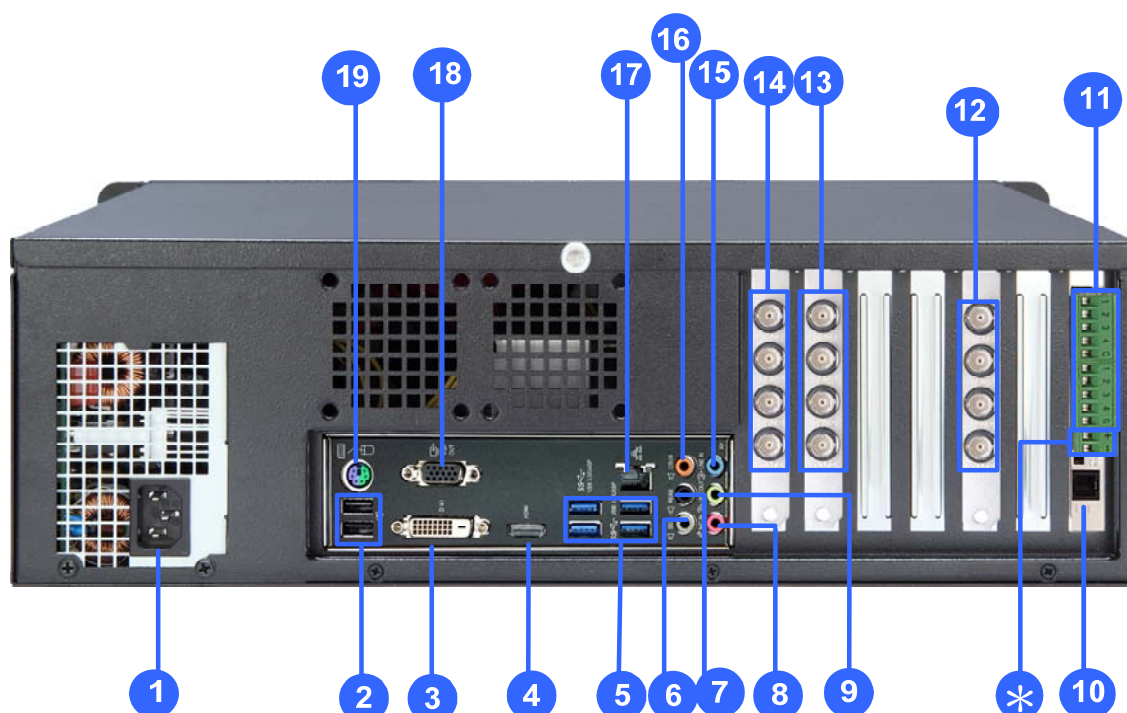
Figure 2-15

No.	Name	No.	Name
1	AC Power Input (Full Range)	11	I/O Terminal Block
2	USB 2.0 Port x 2	12	BNC Video 5-8 (For 8-Ch Model Only)
3	DVI-DL Output (DVI-D Signal Only)	13	BNC Video 1-4
4	HDMI Port	14	BNC Video 9-12 (For 12-Ch Model Only)
5	USB 3.0 Port x 4	15	Audio Line In Port
6	Side R/L Port	16	Center / Subwoofer Port
7	Rear R/L Port	17	Gigabit Ethernet Port
8	Audio Microphone In Port	18	VGA Monitor Output
9	Audio Line Out Port	19	PS/2 Keyboard or Mouse
10	RJ-11 Port	*	The RS-485± ports are not functional on GV-SDI-204H V5.

Note:

1. To connect two monitors, use ports No. 3, No. 4 or No. 18. The DVI-DL output (No. 3) only supports the digital signal, and it can be only connected to a monitor with a DVI connector.

2. BNC Video 9-12 (No. 14) is only supported in 3U (8-bay) models.

2.3.2.2 GV-5016H V5

Figure 2-16

No.	Name
1	D-Type Audio and Video 1-16
2	D-Type Audio and Video 16-32 (For 32-Ch Model Only)
3	I/O and RS-485± Terminal Block
4	RJ-11 Port
∗	The RS-485± ports are not functional on GV-5016H V5.

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-15.

2.3.2.3 GV-3008H V5
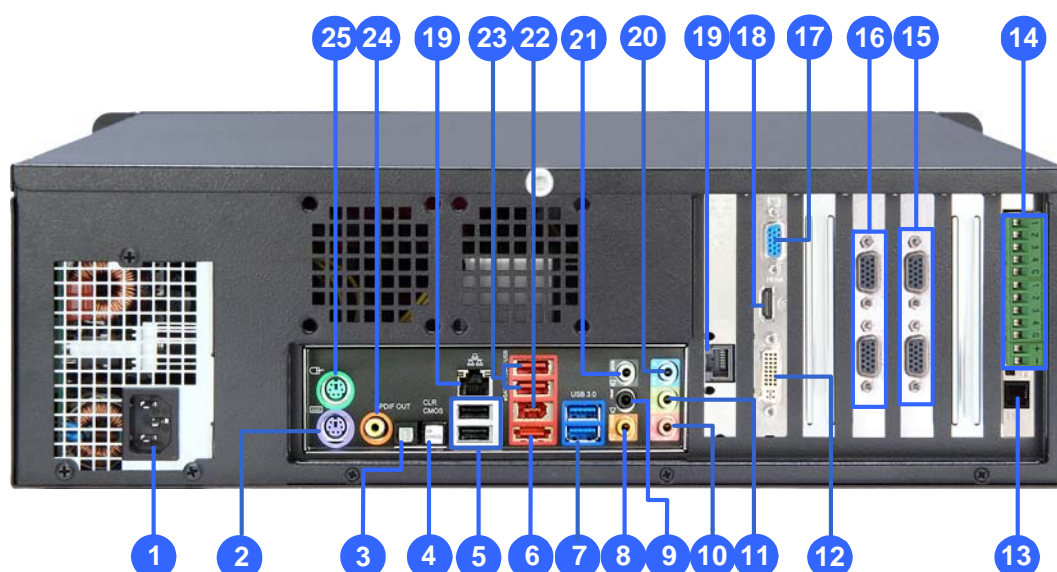
Figure 2-17

No.	Name	No.	Name
1	AC Power Input (Full Range)	14	I/O and RS-485± Terminal Block
2	PS/2 Keyboard Port	15	D-Type Audio and Video 9-16 (For 16-Ch Model Only)
3	S/PDIF Port		
4	Clear CMOS Switch	16	D-Type Audio and Video 1-8
5	USB 2.0 Port x 2	17	VGA Monitor Output
6	eSATA	18	HDMI Port
7	USB 3.0 Port x 2	19	Gigabit Ethernet Port x 2
8	Center / Subwoofer Port	20	Audio Line In Port
9	Rear R/L Port	21	Side R/L Port
10	Audio Microphone in Port	22	IEEE 1394 Port
11	Audio Line Out Port	23	USB 2.0 Port x 2
12	DVI-DL Output (DVI-D Signal Only)	24	S/PDIF Port
13	RJ-11 Port	25	PS/2 Mouse Port

2.3.2.4　GV-1480H / GV-1240H / GV-1120H V5

Figure 2-18

No.	Name
1	DVI Video 1-16, DVI Audio 1-16
2	DVI Video 17-32, DVI Audio 17-32 (For 32-Ch Model Only)
3	I/O and RS-485± Terminal Block
4	RJ-11 Port

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-15.

2.3.2.5   GV-900H V5

Figure 2-19

No.	Name
1	DVI Video 1-16 with Audio 1-8
2	DVI Video 17-32 with Audio 17-24 (For 32-Ch Model Only)
3	I/O and RS-485± Terminal Block
4	RJ-11 Port

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-15.

2.3.2.6   GV-800H V5

Figure 2-20

No.	Name
1	DVI Video 1-16 and Audio 1-4
2	DVI Video 17-32 and Audio 17-20 (For 32-Ch Model Only)
3	I/O and RS-485± Terminal Block
4	RJ-11 Port

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-15.

2.3.2.7   GV-NVRH V5 / GV-VMSH V5

16 / 8-Bay Model

Figure 2-21

No.	Name
1	Gigabit Ethernet Port
2	I/O Terminal Block
3	RJ-11 Port
∗	The RS-485± ports are not functional on GV-NVRH V5 / GV-VMSH V5.

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-15.

2.3.2.8   GV-Hot Swap Recording Server System

16 / 8-Bay Model

Gigabit Ethernet Port
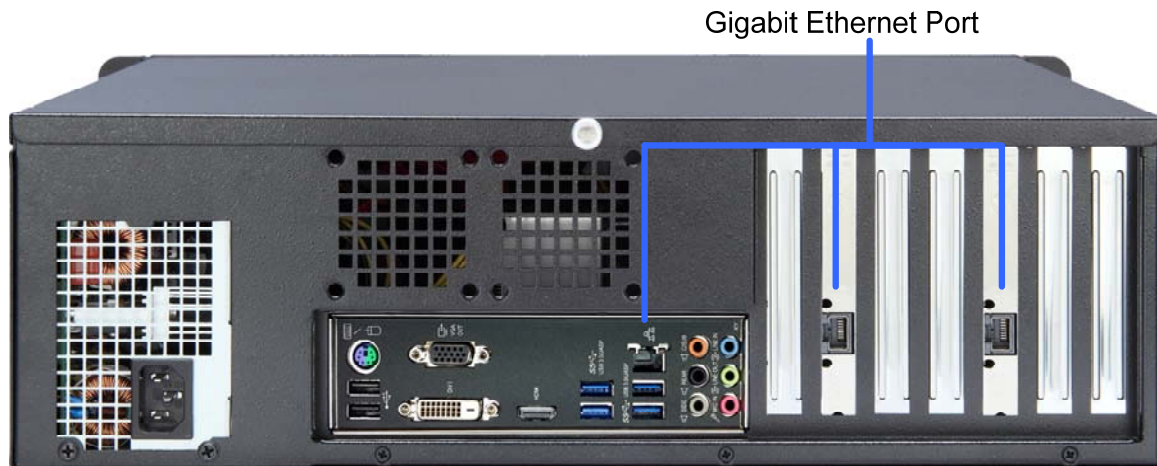
Figure 2-22

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-15.

2.3.2.9   GV-Hot Swap Backup Center System

16 / 8-Bay Model

Figure 2-23

For details on the other features of the motherboard and power supply on the rear panel, see Figure 2-15.

2.3.3 Integrated Models

For **3U (8-bay) models**, you can have up to two GV-SDI-204 Cards with one GV-Video Capture Card (GV-5016 / GV-1480B / GV-1240B / GV-1120B / GV-900A / GV-800B). For **4U (20-bay) and 3U (16-bay) models**, you can combine one GV-SDI-204 Card with one GV-Video Capture Card listed above. For the deployment of each card, refer to the figure below.
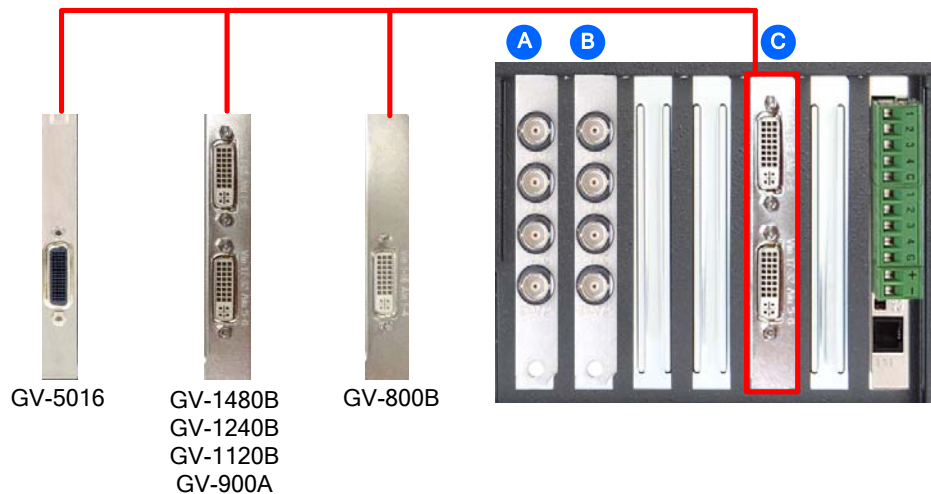
Figure 2-24

3U (8-bay) models	Slot No.			Order of Channel Number
	A	**B**	**C**	
Capture Card	GV-SDI-204	GV-SDI-204	GV-5016	C -> A -> B
			GV-1480B / GV-1240B / GV-1120B / GV-900A / GV-800B	A -> B -> C

4U (20-bay) / 3U (16-bay) models	Slot No.			Order of Channel Number
	A	**B**	**C**	
Capture Card	N/A	GV-SDI-204	GV-5016	C -> B
			GV-1480B / GV-1240B / GV-1120B / GV-900A / GV-800B	B -> C

Chapter 3   Getting Started

3.1   Basic Installation

This section describes all the equipments required to program and operate the GV-Hot Swap Surveillance System V5. Up to 3 monitors can be connected to the System.

3.1.1   All Models (excluding GV-3008H V5)

Here we use the 4U (20-bay) models of GV-1480H / GV-1240H / GV-1120H V5 (32-Ch) as the example.

Figure 3-1

1. Using the VGA cable supplied by the monitor manufacturer, connect the VGA monitor.

2. Using the supplied power cord, connect one end to the AC input and the other end to the power outlet.

3. Connect the mouse to the PS/2 mouse port or USB port.

4. Connect the keyboard to the PS/2 keyboard port.

5. Connect speakers to the Audio Line Out port.

6. Using the supplied DVI audio cables, connect one end to the DVI audio ports and the other end to the microphones.

7. Using the supplied DVI video cables, connect one end to the DVI video ports and the other end to the cameras.

8. Using the RJ-45 cable, connect one end to the Ethernet port and the other end to Network.

![GeoVision logo]

Note: The monitor you use must be capable of having a screen resolution of 1280 x 1024 and display color of 32 bits.

Connecting to 3 Monitors

You can connect up to 3 monitors to the ports labeled below on the back panel of the GV-Hot Swap Surveillance System V5. Here we use the 3U (16 / 8-bay) model as the example.

VGA Monitor Output

DVI-D Monitor Output   HDMI Monitor Output

Figure 3-2

Note: Optionally, you can purchase Graphic Cards to connect up to 7 monitors. For details, see *3.13.5 Graphic Cards.*

3.1.2 GV-3008H V5
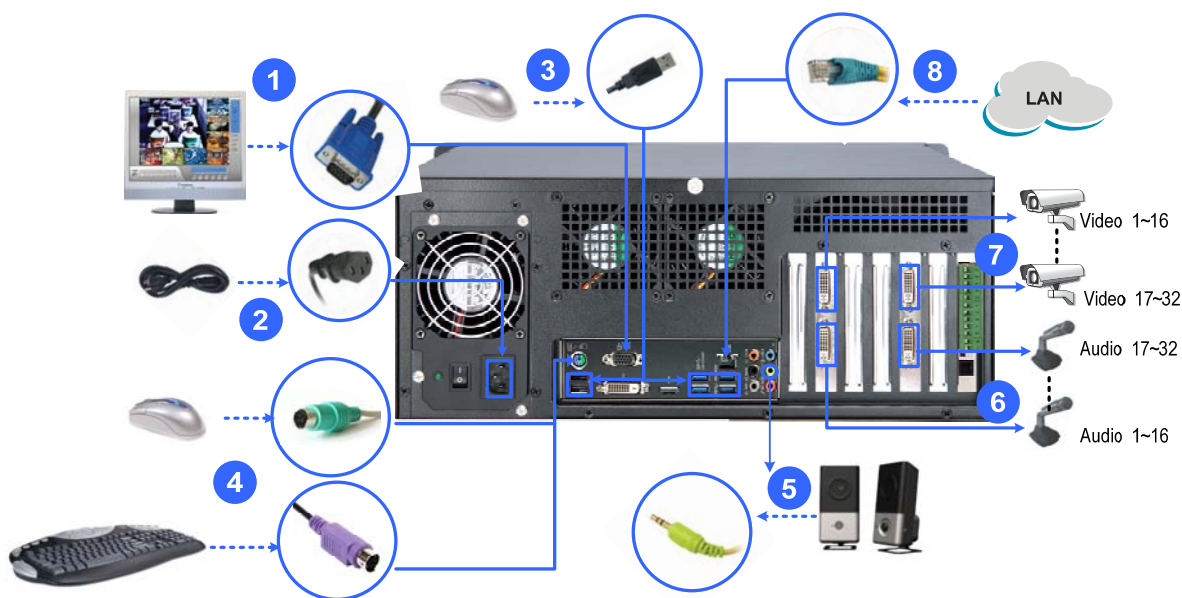
Here we use the 3U (8-bay) model as the example.
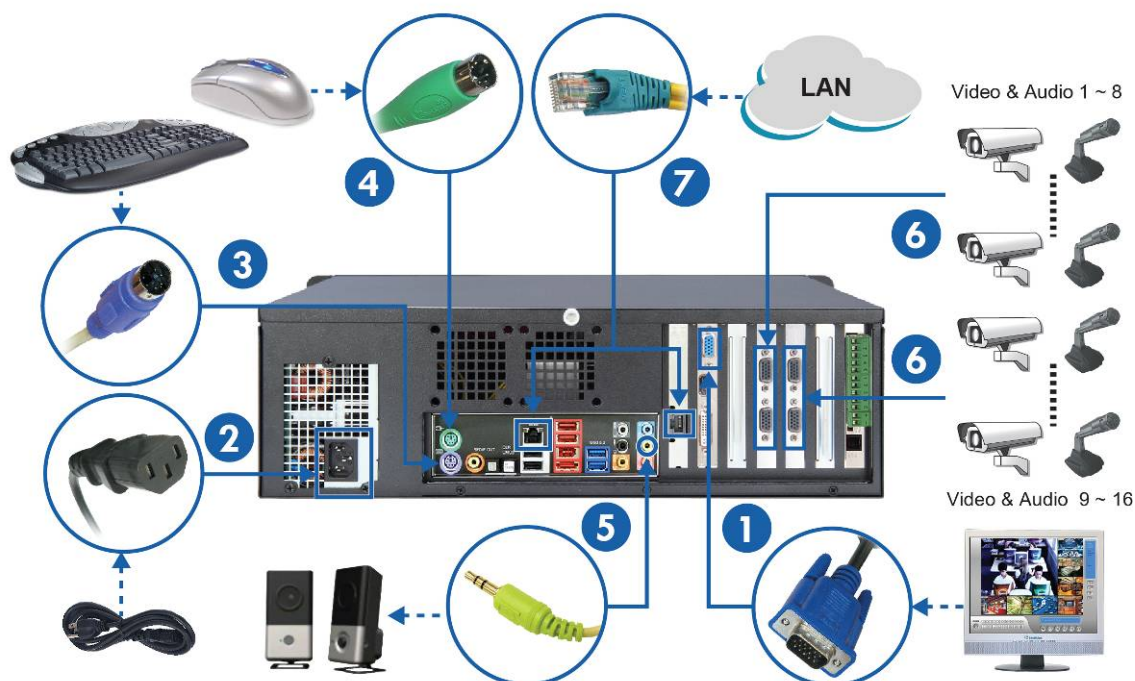
Figure 3-3

1. Using the VGA cable supplied by the monitor manufacturer, connect the VGA monitor.

2. Using the supplied power cord, connect one end to the AC input and the other end to the power outlet.

3. Connect the keyboard to the PS/2 keyboard port.

4. Connect the mouse to the PS/2 mouse port.

5. Connect speakers to the Audio Line Out port.

6. Using the supplied D-Type audio and video cables, connect the white ends to the microphones, and the black ends to the cameras.

7. Using the RJ-45 cable, connect one end to the Ethernet port and the other end to Network.

Note: The monitor you use must be capable of having a screen resolution of 1280 x 1024 and display color of 32 bits.

Connecting to 2 Monitors

You can connect up to 2 monitors to 2 of the 3 ports labeled below on the back panel of the GV-Hot Swap Surveillance System V5. Here we use the 3U (8-bay) model as the example.
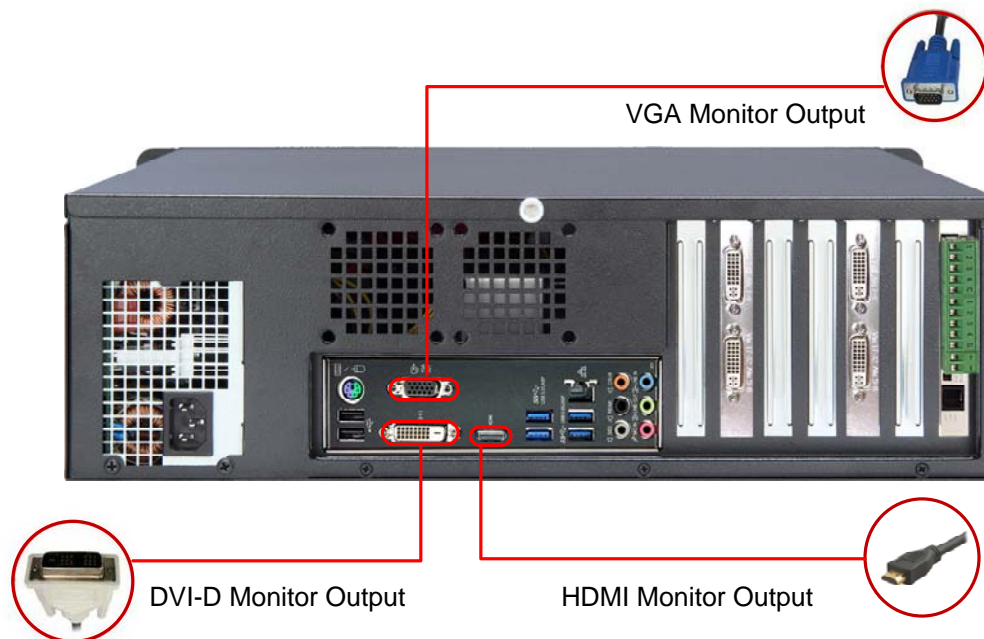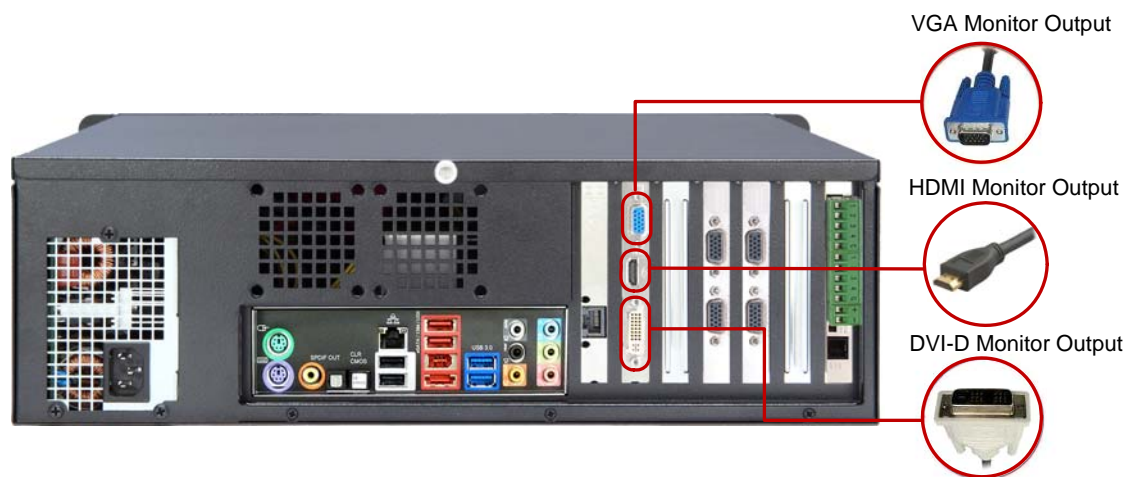

Figure 3-4

3.2   Turning on the Power

Once the above hardware is properly connected, it is the time to turn on the GV-Hot Swap Surveillance System V5. To turn on the power, follow these steps:

1. Turn on the monitor.

Power On
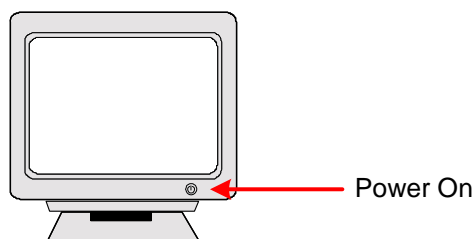
Figure 3-5

2. For 4U (20 bay) models, turn on the AC power switch on the rear panel first.

4U (20-Bay) Models

Power Switch

Figure 3-6

3. Turn on the main power switch on the front panel.

Power Button

Figure 3-7

The GV-Hot Swap Surveillance System V5 will run a series of self-tests, and later series of messages may be displayed as the various hardware and software subsystems are activated. After this is finished,

- **GV-Hot Swap DVR System V5** brings you to the main screen display of 8, 16 or 32 cameras.

- **GV-Hot Swap NVR System V5** pops up GV-IP Device Utility to detect IP devices under the same LAN. To add an IP camera to the system, see *Adding IP Video Devices,* Chapter 5, in the *Quick Start Guide*. Or see *Camera Mapping Using GV-IP Device Utility*, Chapter 2, in *GV-DVR User's Manual*.

- **GV-Hot Swap VMS System V5** pops up the Automatic Setup dialog box. To add an IP camera to the system, see *Adding IP Cameras to GV-VMS*, Chapter 6, in th*e Quick Start Guide*.

- **GV-Hot Swap Recording Server System** and **GV-Hot Swap Backup Center System** pops up login Web interface. See Chapter 7 and Chapter 8 respectively in the Quick Start Guide.

Note:

1. The series of self-tests will take around 20 seconds to 2 minutes, depending on the number of installed hard drives.

2. For 4U (20-bay) and 3U (16-bay) models, the Power LED and the LEDs of HDD Groups A to D should shine after power is on. If any of HDD Group LEDs does not shine, please contact GeoVision.

3.3 Installing the Hard Drive

The GV-Hot Swap Surveillance System V5 uses SATA hard drives for video and audio data storage. Before recording, be sure to install your hard drives.

1. Make sure the HDD Activity LED is off before you install the hard drive.
2. Slide the release latch to the right. The drawer handle pops up.

Release Latch

Figure 3-8

3. Pull out the drive drawer.
4. Insert the hard drive in the drawer.

Figure 3-9

5. Secure the hard drive with the 4 screws (included in the drawer), and make sure all screw heads flush with the surface.

Figure 3-10

6. Put the drawer back in the drive bay of the System, and push the latch until it locks. The white LED on the drawer shines, and the hard drive is now ready to use.

3.4 Windows Setup Installation

The Windows setup is preparing your computer for first use.

1. After the Windows starts, this setup screen appears. Select your language and click **Next** to continue.
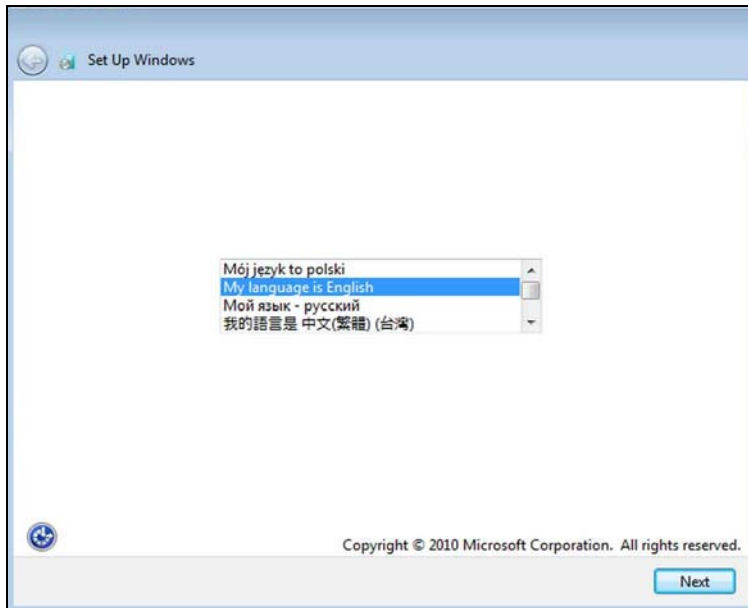
Figure 3-11

2. Select your Country or region, Time and currency, and Keyboard layout and click **Next** to continue.
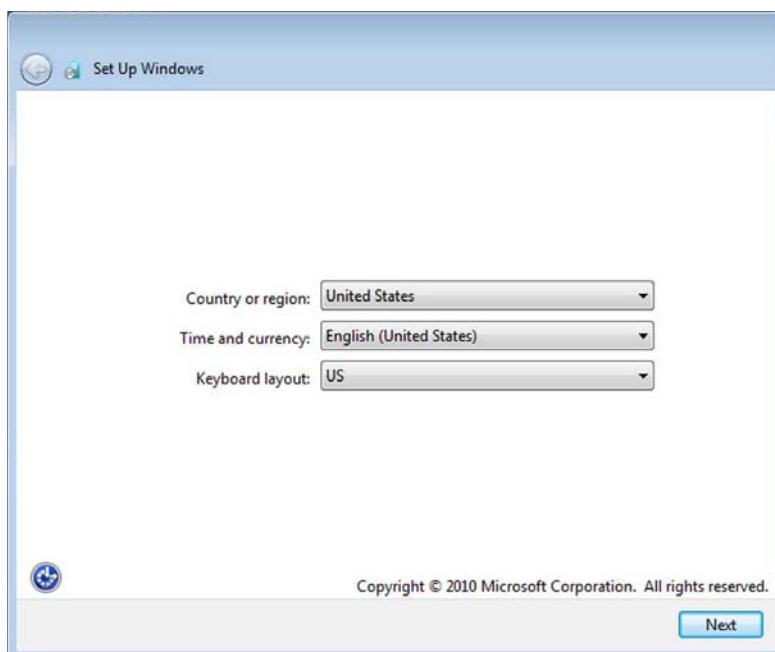
Figure 3-12

3. Type a user name for your account and then click **Next** to continue.
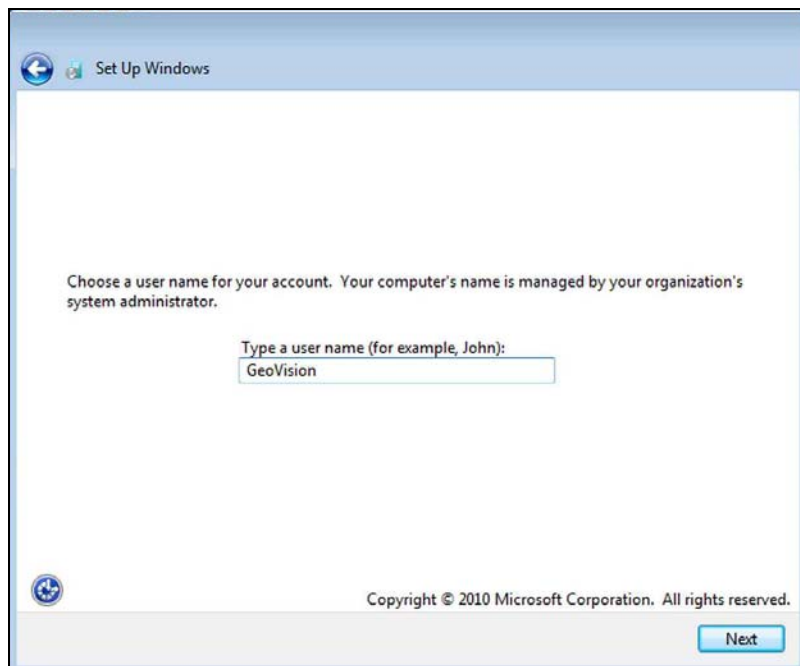
Figure 3-13

4. It is recommended that you create a password for your account and then click **Next** to continue.

Figure 3-14

5. Since no license terms are specified, the page is left blank intentionally. Select **I accept the license terms** and click **Next** to continue.
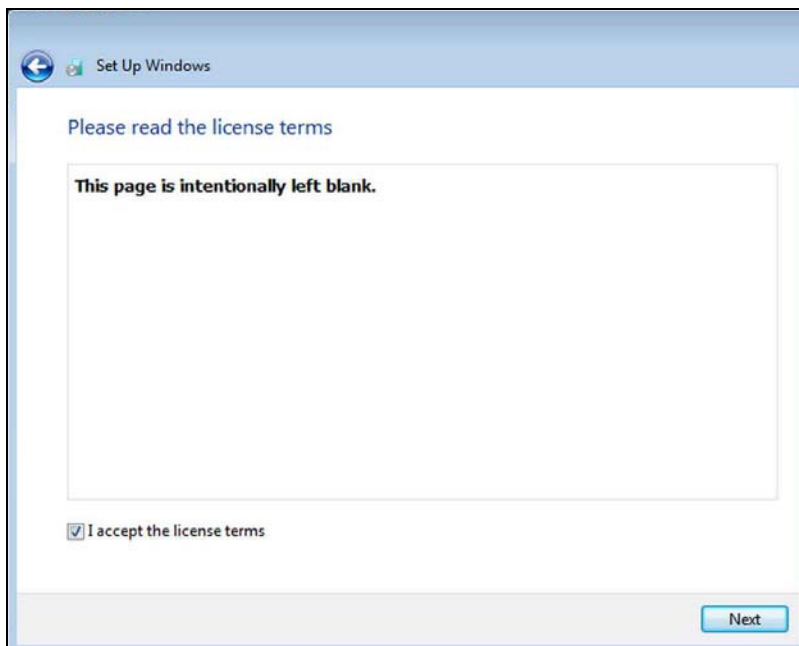
Figure 3-15

6. It is recommended that you choose **Ask me later** to disable Windows automatic updates.

Figure 3-16

7. Choose the correct Time zone, Date, and Time and click **Next** to continue.
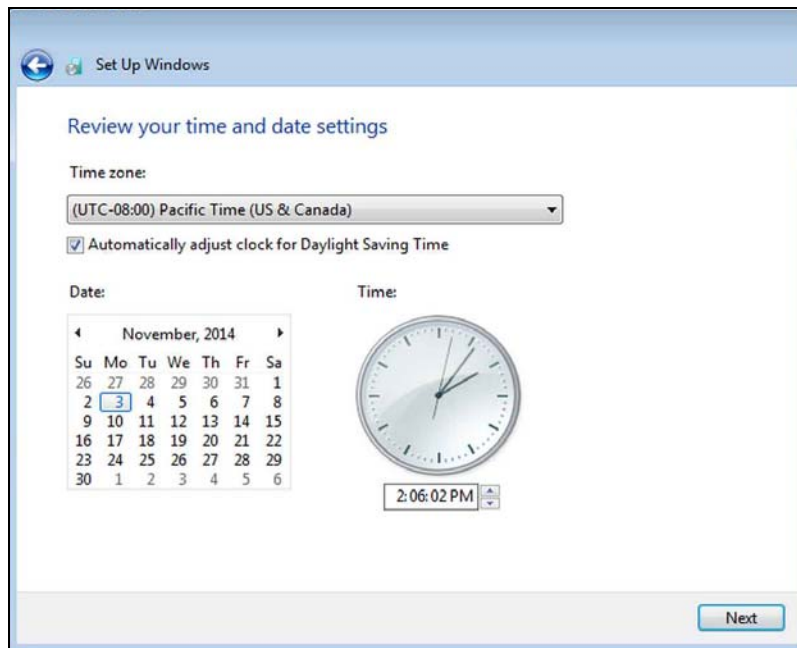
Figure 3-17

8. You may see the below screen if a network connection is detected by your computer. It is recommended that you select the **Work network** for security purposes and click **Next**.

Figure 3-18

When the above setup process is complete, Windows will finalize your settings automatically in the background and restart.

3.5 Formatting the Hard Drive

After installing hard drives to your system, you will need to format them before use.

- For GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5, follow the steps below from step 1.

- For GV-Hot Swap Recording Server System and GV-Hot Swap Backup Center System, right-click **My Computer**, select **Manage,** select **Disk Management** and then skip to step 3.

1. On the GV-Desktop, click the **Programs** button, and select **Disk Management**.
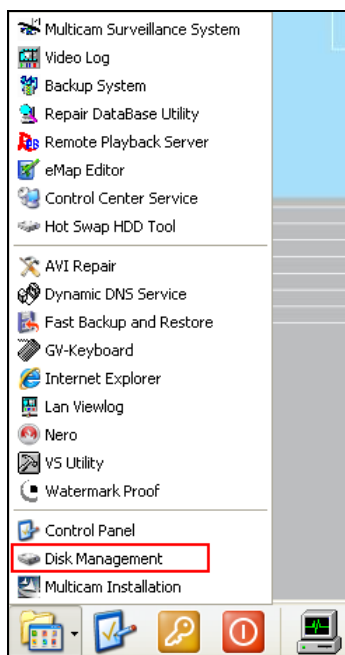
Figure 3-19

2. Type the ID and password in the dialog box. The default ID and password are **0000**.
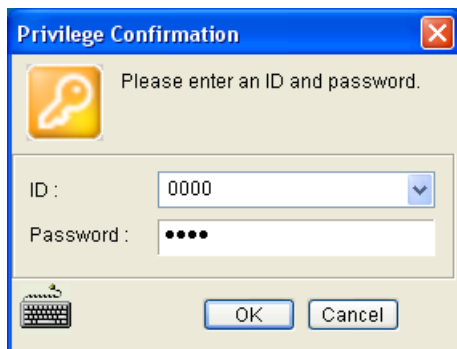
Figure 3-20

3. On the main page of Disk Management, the Initialize Disk dialog box appears for the new drive. Click the created disk and select a partition style.
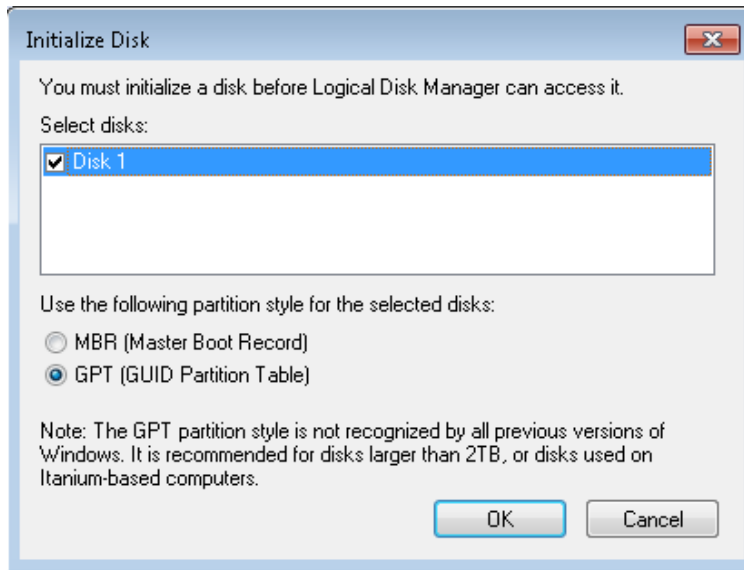
Figure 3-21

4. Click **OK**. The created disk is successfully initialized.

5. On the main page of Disk Management, right-click in the unallocated space of a new drive and select **New Simple Volume**.
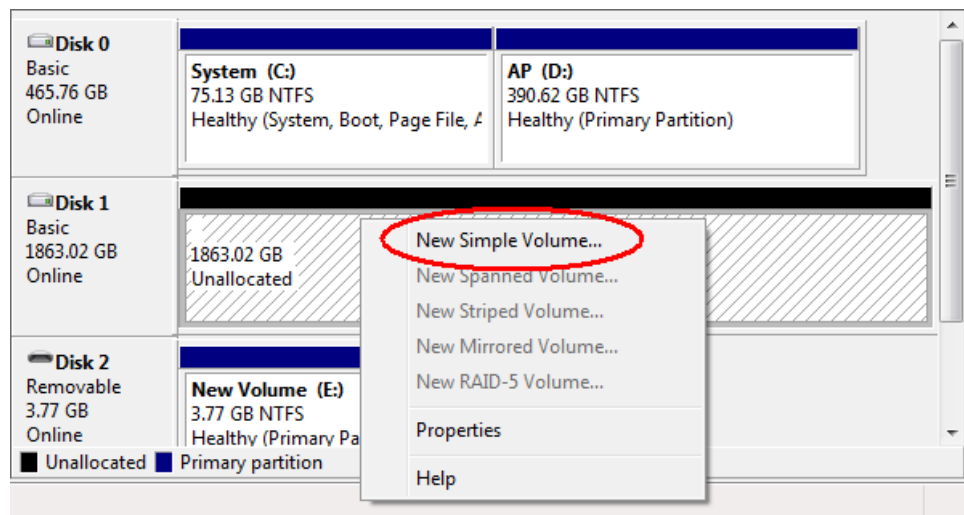
Figure 3-22

6. The New Simple Volume Wizard appears. Click **Next** to continue.
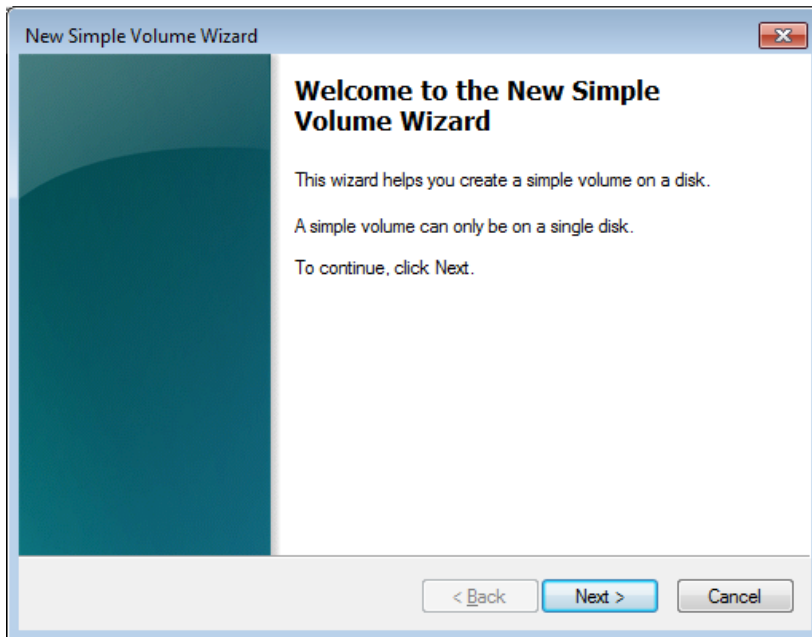
Figure 3-23

7. The default partition size is the same as the maximum disk space. Make changes if necessary. Click **Next** to continue.
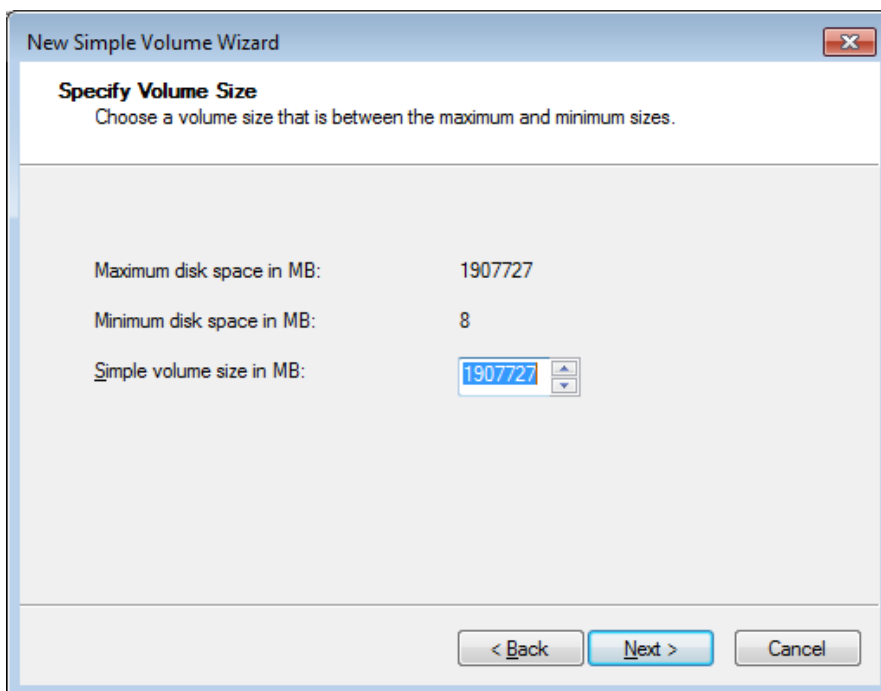
Figure 3-24

8. Assign a drive path that is not in use by other devices, and click **Next** to continue.
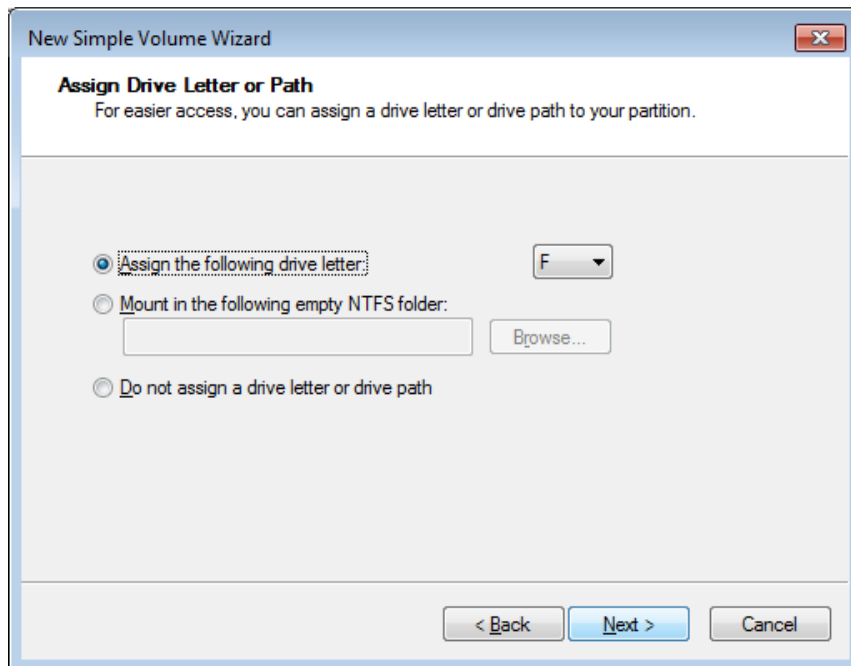
Figure 3-25

Note: The default drive path starts from **F:**.

---

9. Type a name in the **Volume label** box, ex. HDD1, and click **Next** to continue.
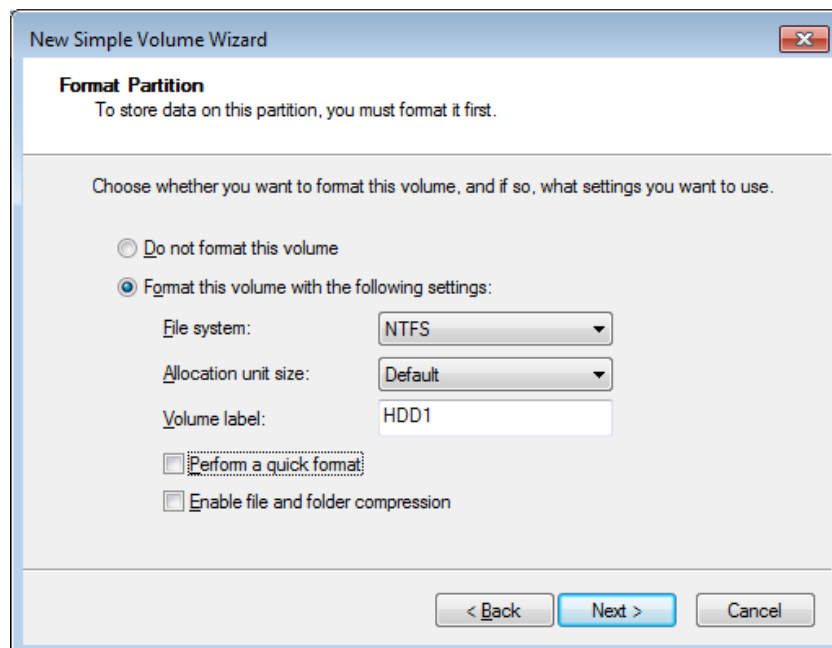
Figure 3-26

10. When the formatting is complete, click **Finish** to close the wizard.
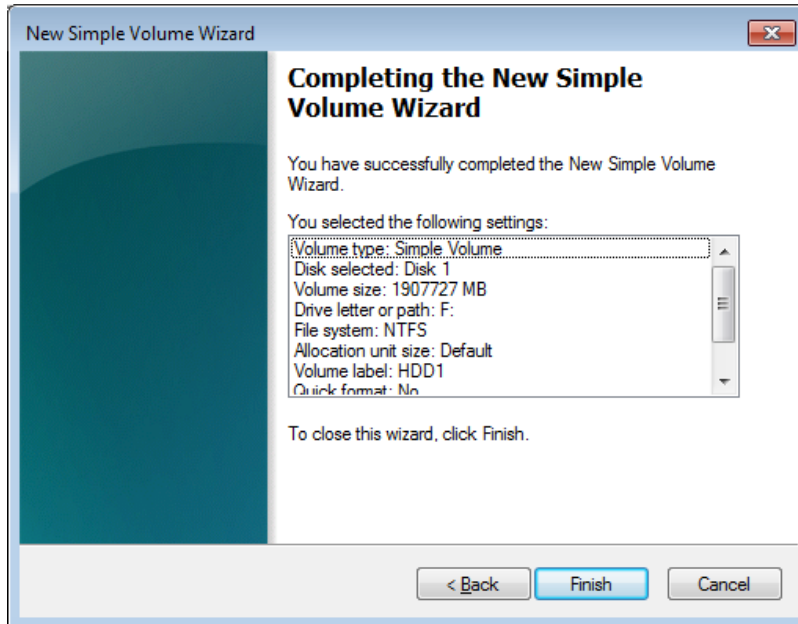
Figure 3-27

11. When the drive is successfully initialized, partitioned, and formatted, its status description should display "*Healthy.*"
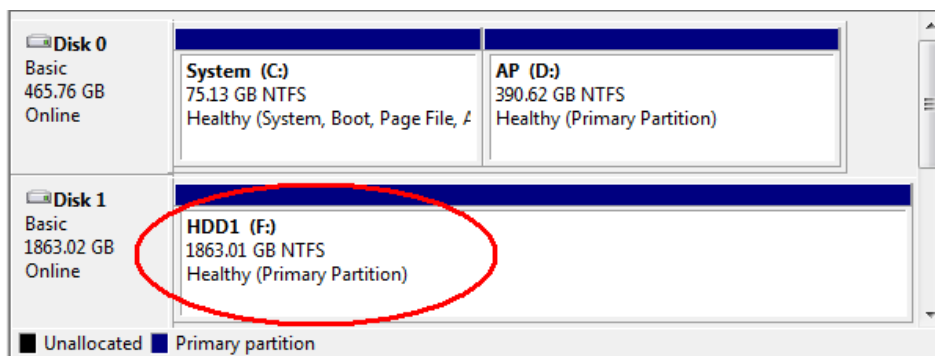
Figure 3-28

3.6 Adding the Hard Drive to the Recording Path

Note the function is not available for **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

For GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5, you need to add the formatted hard drives to the recording path before recording.

3.6.1 GV-Hot Swap DVR/NVR V5

1. On the GV-Desktop, click the **Programs** button, and select **Hot Swap HDD Tool**. The MediaMan Tools window appears.
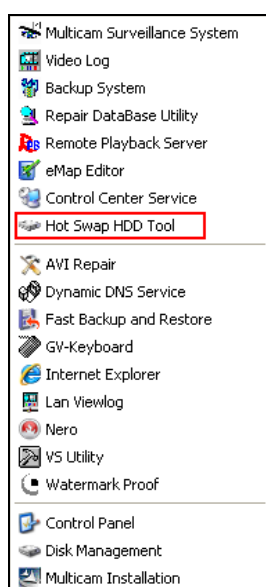
Figure 3-29

2. If a hard drive is already inserted, right-click it in the MediaMan Tools window, select **Add for recording**, and then select the storage group from the drop-down list.

3. If a hard drive is not inserted, follow these steps:

   A. Insert a hot-swap hard drive or plug a portable hard drive to the GV-Hot Swap DVR/NVR V5. This dialog box appears.
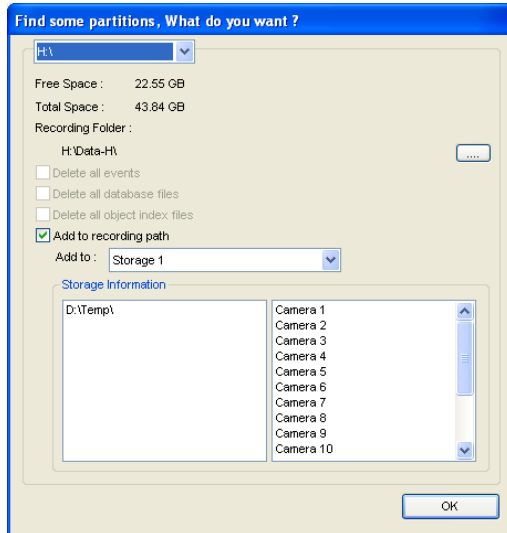
Figure 3-30

   B. Select **Add to recording path**, and select the storage group from the drop-down list.

Note: Storage 1 is the default storage group.

---

4. Click **OK** to automatically configure the hard drive to the recording path.

5. In the MediaMan Tools window, if the hard drive is successfully added to store data, its Status field should display "*Standby*".
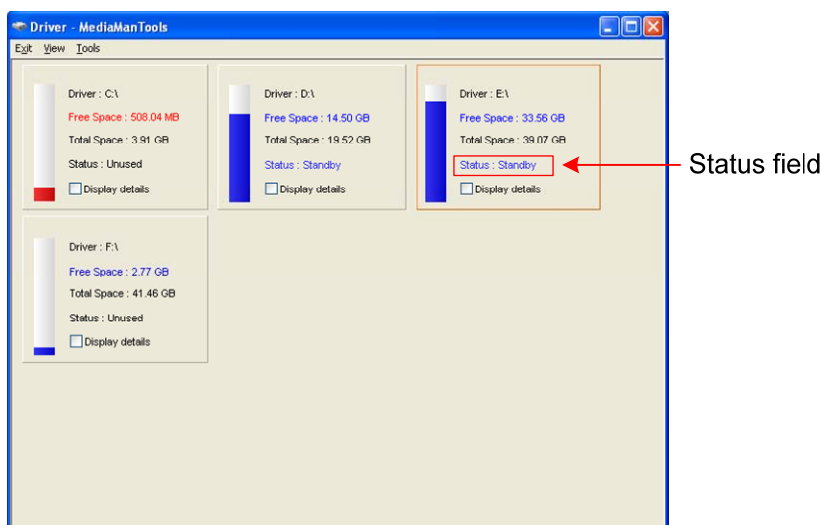
Figure 3-31

6. To add another formatted hard drive for storage, repeat the above steps.

For details on using Hot Swap HDD Tool, see Chapter 11, *GV-DVR User's Manual* (GV-Desktop > **Program** button > **User Manual**).

3.6.2 GV-Hot Swap VMS V5

1. On the GV-VMS, click **Home** 👁, select **Toolbar** ✂, select **Configure** ⚙, select **System Configure**, and click **Record Setting.** The Record Setting dialog box appears.

2. Click the Arrow button ▶ next to **Storage**.
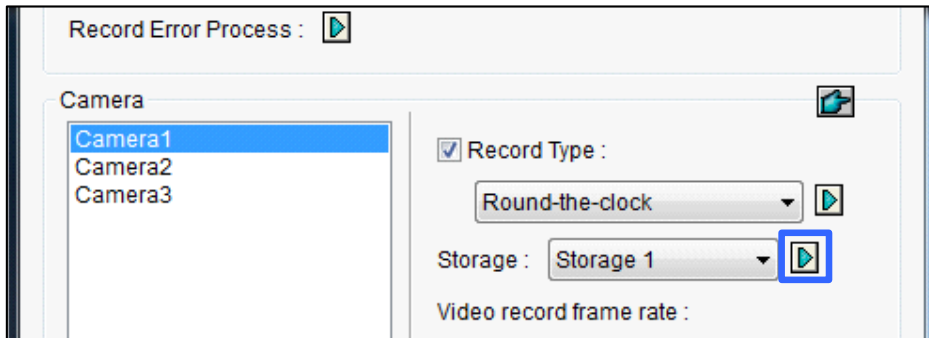
Figure 3-32

3. To add a folder in the first storage group, click the **Add** button ➕ above Path and select a folder. Only 1 folder can be assigned as storage folder per partition (e.g. only 1 folder in D drive).
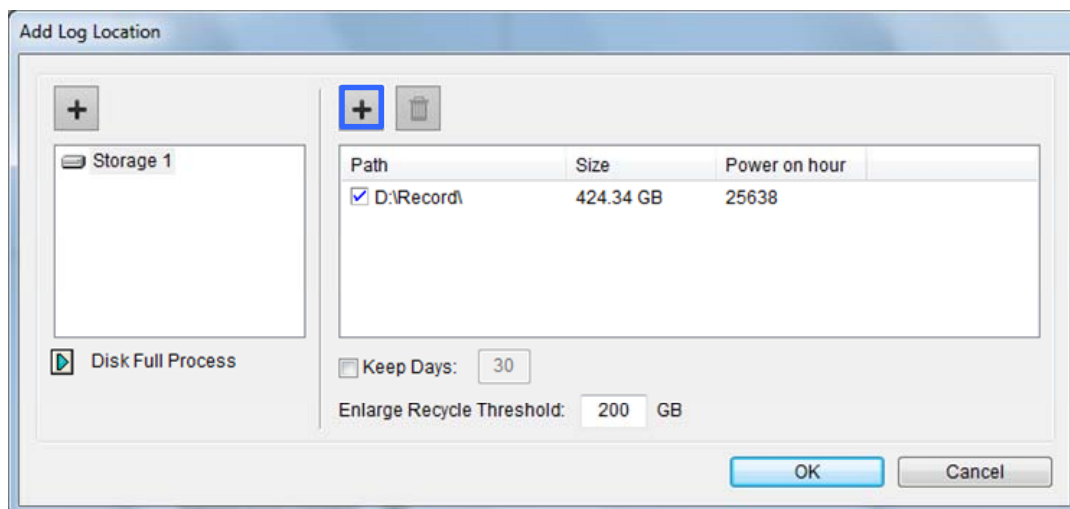
Figure 3-33

4. To create a new storage group, click the **Add** button ➕ in the top-left corner.
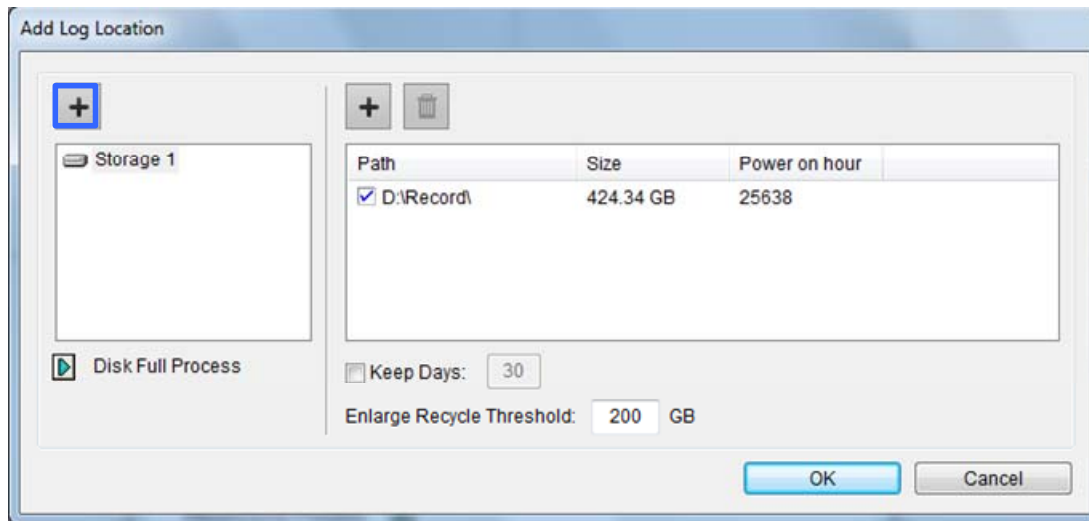
Figure 3-34

5. To add a recording folder to a newly created storage group, repeat step 3.

6. Select **Keep Days** and specify the number of days to keep the video files in storage.

Note: If the designated storage space is not big enough to keep all video files for the defined days, the **Recycle Threshold** setting will override the **Keep Days** setting.

For the details on using the recording settings, see *Setting Up the Video Storage Location*, Chapter 1, *GV-VMS User's Manual* in the path C:\UserManual (GV-Desktop > **Program** button > **User Manual**).

3.7   Setting Up On-Screen LED Panel

Note the function is not supported by **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

For GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5, a LED panel on the screen provides a quick indication of the activity status of hard disk drives.

Figure 3-35

LED Color	Description
Gray	- No HDD is assigned to this LED. - GV-System is not started.
Green	A HDD is assigned to this LED.
Red	The HDD is full.
Flashing Green	GV-System is recording.
Flashing Red	The HDD is recycling.

1. On the GV-Desktop, click the **Programs** button, and then select **Hot Swap HDD Tool**.

2. Click **Tools** on the menu bar and select **Setup LED Panel**. This dialog box appears.
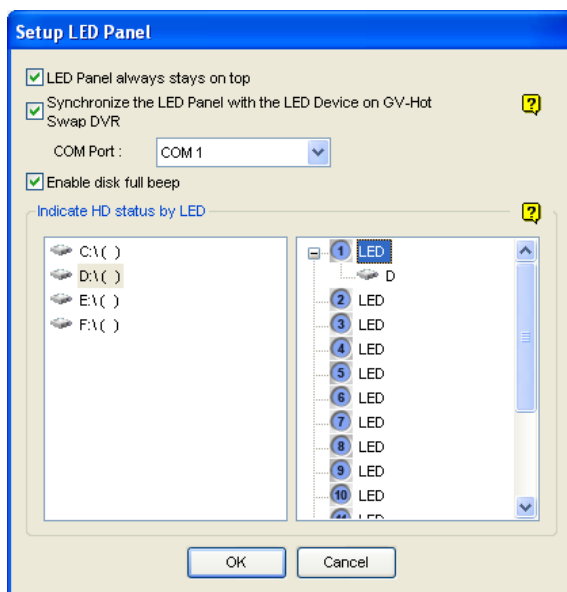
Figure 3-36

■   **LED Panel always stays on top:** This option makes the LED panel stay on top of other windows when the Media Man Tools window is minimized.

■   **Synchronize the LED Panel with the LED Device on GV-Hot Swap DVR/NVR:** When this option is enabled, the LED device installed on the front door of the GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5 will synchronize with the LED panel on the screen.

■   **Enable disk full beep:** When the hard disk drive is full, the system sounds on. Note this function only works when speakers are connected to the GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5.

3. By default, only the hard disk drive F will be assigned to LED. If you want to re-assign the hard disk drive or assign other drives to LEDs, freely drag and drop the hard disk drive to the desired LED on the tree.

4. Click **OK** to apply the settings, and minimize the MediaMan Tools window to display the LED panel on the screen.

5. If you want to return to the MediaMan Tools window, right-click the LED panel and select **Switch to the setup window**.

Note:

1. Because the LEDs are designed to indicate the video and audio files are being written or read, it is not recommended to assign the HDDs that store log files to the LEDs.

2. If the HDD that stores log files is assigned to a LED and its LED turns red, make sure the log files are not being written before you remove it. Otherwise, the log files might be lost during the removal.

3.8 Replacing the Hard Drive

You can replace the hard drive in the Hot Swap Drive Bay without shutting down the GV-Hot Swap Surveillance System V5.

1. Make sure the HDD Activity LED (No. 2, Figure 2-4) is off.

2. Slide the release latch to the right. The drawer handle pops up.

3. Pull out the drawer slightly, and wait until the hard drive spins down.

4. Pull out the drawer completely, remove the hard drive, and then mount a new one.

5. Screw the hard drive, and make sure all screw heads flush with the surface.

6. Put the drawer back in the drive bay and slide the release latch again.

3.9 Configuring the IP Address

The GV-Hot Swap Surveillance System V5 supports remote monitoring, control and configuration over a network connection. The following default IP addresses will automatically be assigned.

- **192.168.0.200**

- **192.168.0.201** (Only available for GV-3008H V5, GV-NVR V5, GV-Hot Swap VMS V5, GV-Hot Swap Recording Server System and GV-Hot Swap Backup Center System)

- **192.168.0.202** (Only available for GV-Hot Swap Recording Server System and GV-Hot Swap Backup Center System)

- **192.168.0.203** (Only available for GV-Hot Swap Backup Center System)

The system supports up to 4 Ethernet ports. The number of Local Area Connection is assigned from the left to the right. Here we use the 4U (20-bay) model of GV-Hot Swap Backup Center System as illustration.

Local Area Connection 1
Default IP: 192.168.0.200

Local Area Connection 2
Default IP: 192.168.0.201

Local Area Connection 3
Default IP: 192.168.0.202

Local Area Connection 4
Default IP: 192.168.0.203

Default Subnet Mask: 255.255.252.0

Figure 3-37

To change the static IP addresses or to enable dynamic IP address, follow the steps below.

- For GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5, start from step 1.

- For GV-Hot Swap Recording Server System and GV-Hot Swap Backup Center System, select **Control Panel** and skip to step 3.

1. On the GV-Desktop, click the **Programs** button, and then select **Control Panel**.
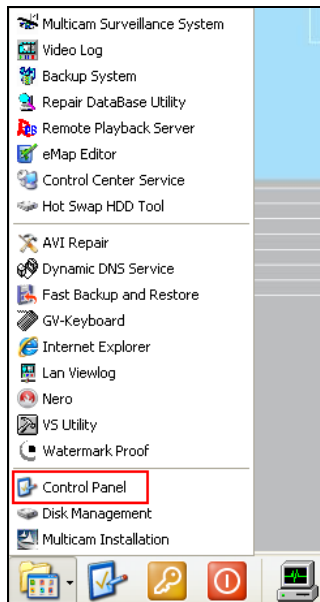
Figure 3-38

2. Type the ID and password. The default ID and password are "**0000**". The Control Panel window appears.

3. Under Network and Internet, click **View network status and tasks**.

4. Under Connections, select the **Local Area Connection** you want to configure.
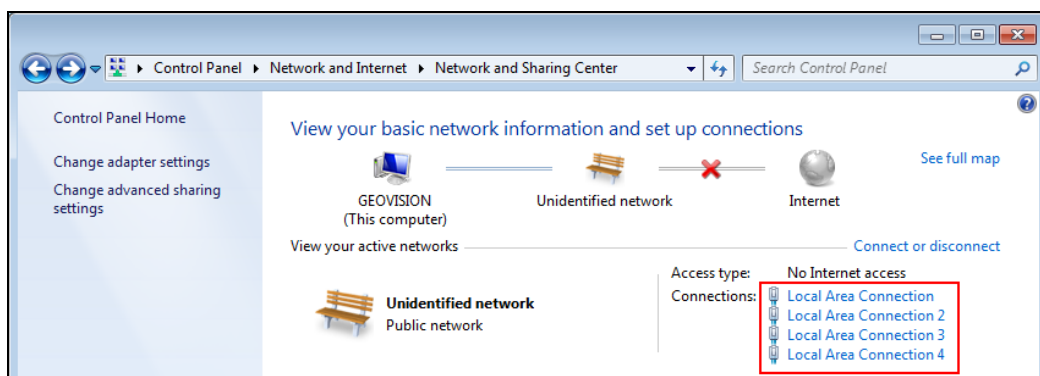
Figure 3-39

5. Select **Internet Protocol Version 4 (TCP/IPv4)** and then click **Properties**.
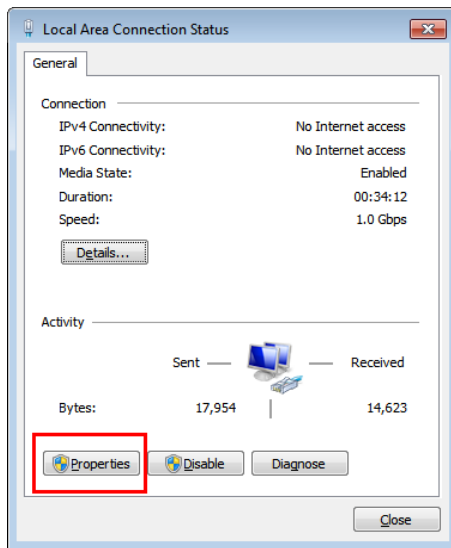
Figure 3-40

6. Select **Use the following IP address** and type the new IP information in the fields or select **Obtain an IP address automatically** to enable dynamic IP address.
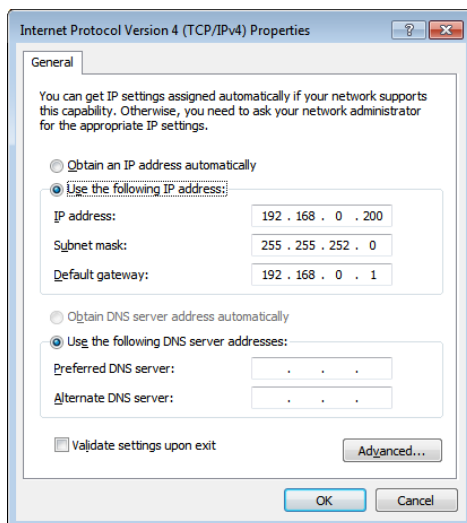
Figure 3-41

7. Click **OK** to finish the setting.

Note: For models with multiple Ethernet ports, it is recommended to assign IP channels received and clients transmitted into different networks. Refer to *Appendix B. Assigning Network Cards* for more details.

3.10   Exiting to Windows

Note this function is not available for **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

GV-Hot Swap DVR/NVR V5 / GV-Hot Swap VMS V5 is protected by GV-Desktop that is limited to run the selected programs. If you need to exit to Windows desktop, follow these steps.

1. On the GV-Desktop, click the **Settings** button, and type the valid ID and password. The default ID and Password are "**0000**". The Settings dialog box appears.
2. Under Desktop Type, select **Windows** from the drop-down list, and click **OK**.
3. Click the **Log Off** button, and type the ID and Password to display the Windows desktop.
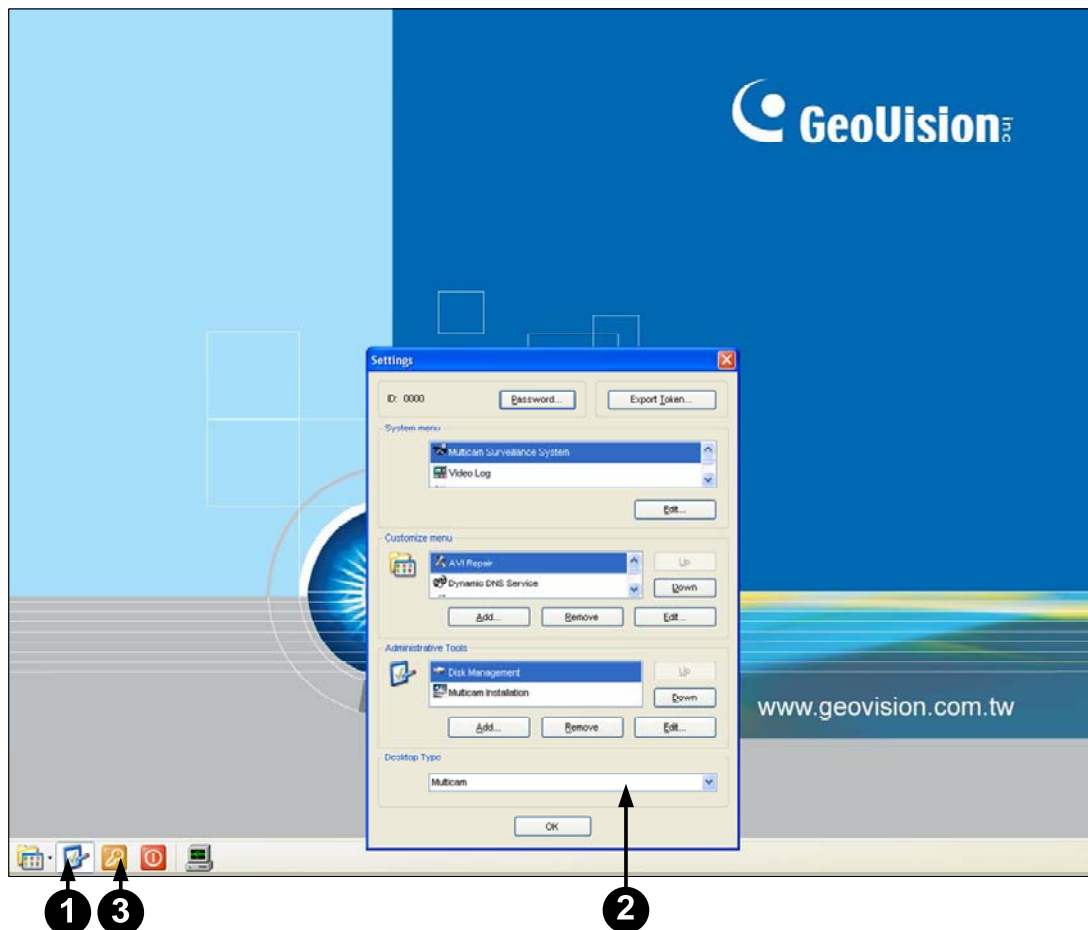
Figure 3-42 The GV-Desktop

3.11   Returning to GV-Desktop

Note this function is not available for **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

To return to GV-Desktop, click the Windows **Start** button, point to **All Programs**, click **GV-DVR/NVR V5**, **GV-DVR**, **GV-NVR** or **GV-VMS** and click **Key Lock Utility**.
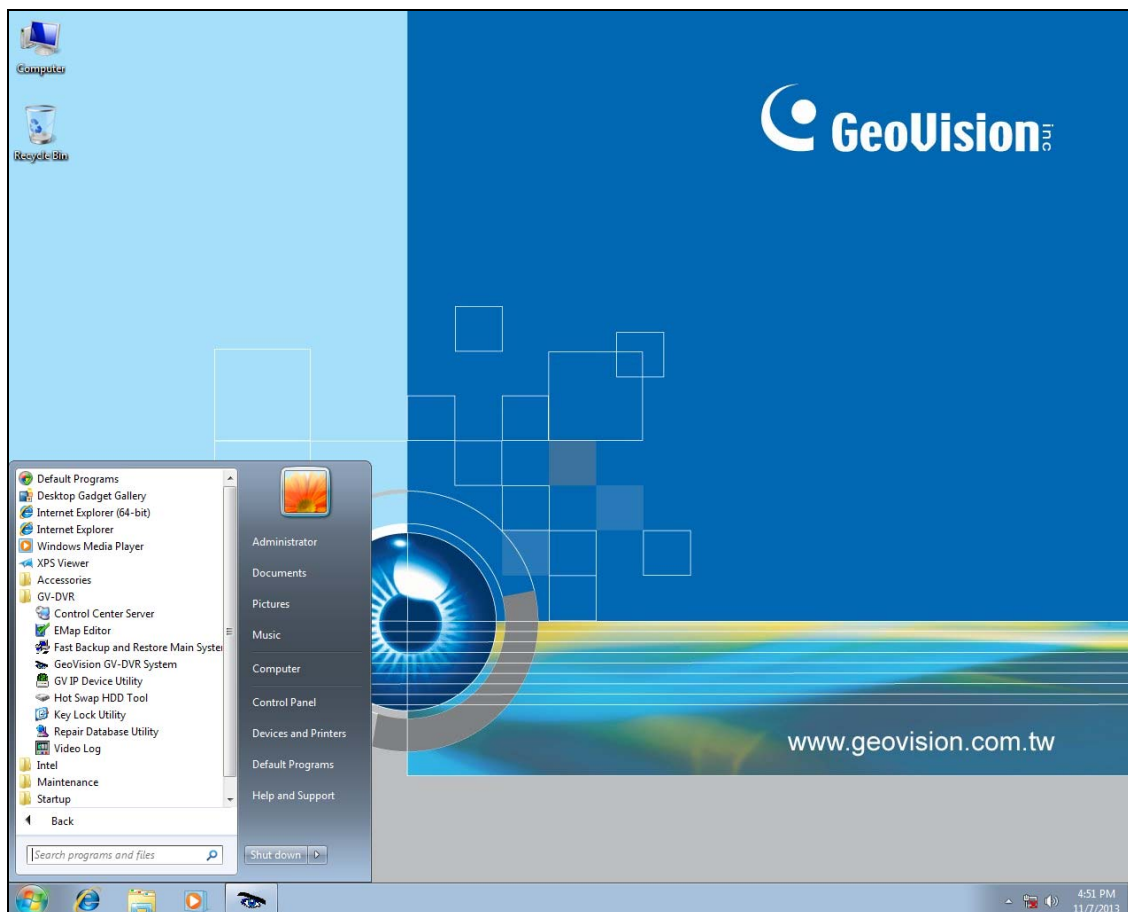
Figure 3-43 Windows 7 desktop

3.12 Multi View Display

Note this function is not available for **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

3.12.1 GV-Hot Swap DVR/NVR System V5

You can display multiple views on up to 6 monitors simultaneously, one for live viewing and the others for playback or other operation without obstructing surveillance scene, with GV-DVD/NVR V5.

1. Follow Steps 1 and 2 in *3.9 Configuring the IP Address* to access the Control Panel window. See Figure. 3-37.

2. In the Control Panel window, click **Adjust Screen Resolution** under the Appearance and Personalization section. This dialogue box appears.
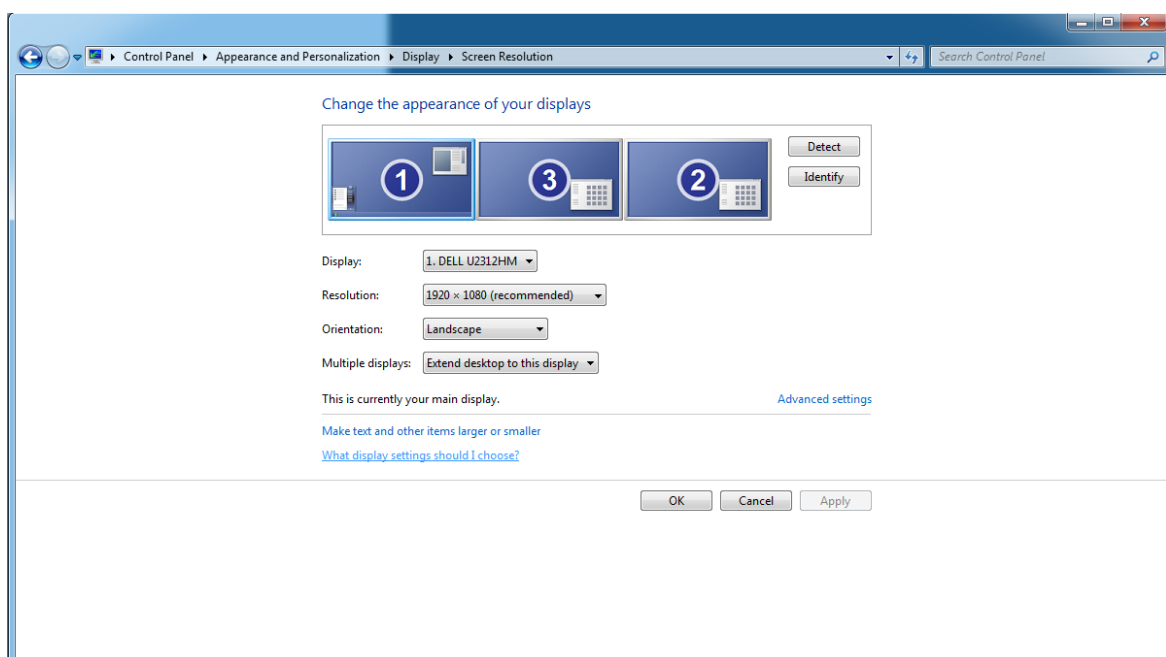
Figure 3-44

3. Click the **Display** list. If you do not see multiple monitors listed, check if your additional monitors are connected with the system properly.

4. Select the primary monitor from the list, and select **Make this my main display**.

5. Select additional monitors from the list, and select **Extend these displays** in the Multiple displays drop-down list.

6. Click **Identify**. Drag and drop the monitor icons to match the physical arrangement of your monitors.

7. Click **OK**.

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8. Go to the system folder and locate **DMPOS.exe**.
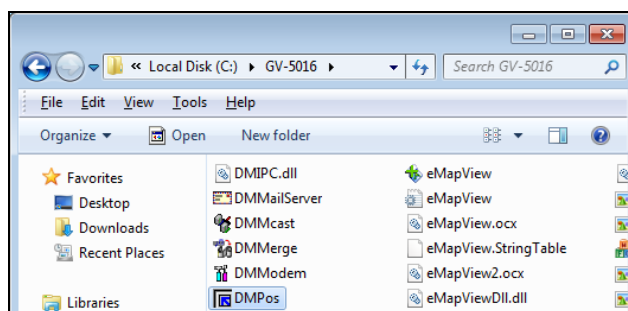
Figure 3-45

9. Run **DMPOS.exe**. This dialog box appears.
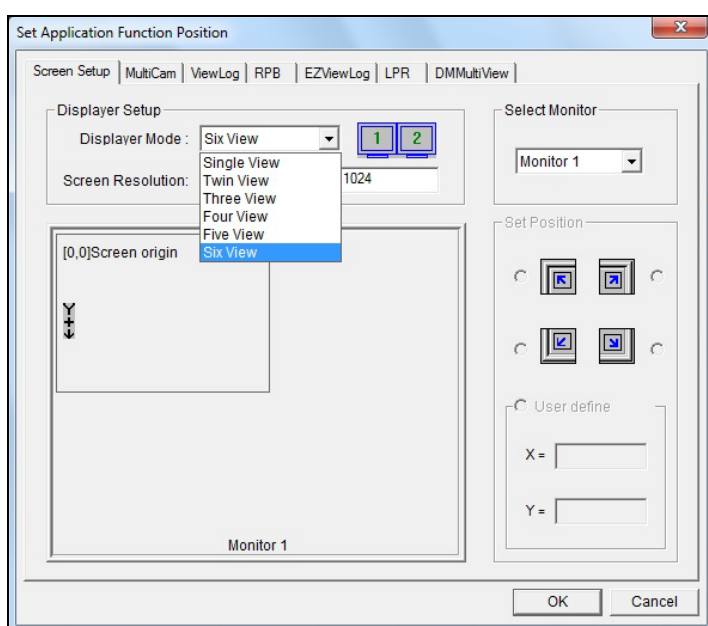
Figure 3-46

10. In the Screen Setup tab, select a desired monitor display mode, such as **Twin View** or **Three View**, from the Displayer Mode drop-down list.

11. To define the live view monitor, in the MultiCam tab, select **Monitor 1** from the Select Monitor drop-down list.

12. Click the desired application tab to move the application to the monitor, For example, select the **ViewLog** tab and **Monitor 2** from the Select Monitor drop-down list.

13. Click **OK**.

The live view should appear on monitor 1. After you open the ViewLog player, it will be displayed on monitor 2.

For details, see *Multi-view Display*, Chapter 11, *GV-DVR User's Manual* (GV-Desktop > **Program** button > **User Manual**).

3.12.2   GV-Hot Swap VMS System V5

You can customize the display settings of GV-VMS. Click **Home** 👁, select **Toolbar** 🛠, select **Configure** ⚙, select **System Configure**, and click **Set Position**. This dialog box appears. The right side of the dialog box is only available when multiple monitors are installed.
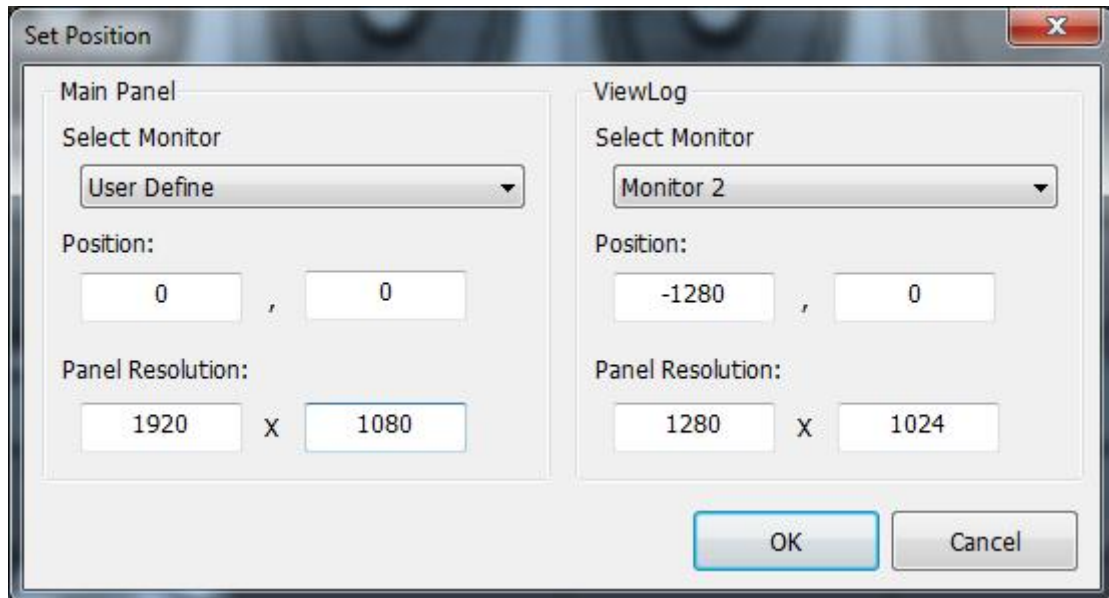
Figure 3-47

- ■ **Select Monitor:** If you have multiple monitors connected, select the monitor you want to configure from the drop-down list.

- ■ **Position:** Offsets the position of the GV-VMS window relative to the upper-left corner of the screen. The default position is 0, 0. A position of 100, 60 will place the GV-VMS window 100 pixels to the right and 60 pixels below the upper-left corner. This function is only supported when the GV-VMS window does not take up the entire screen.
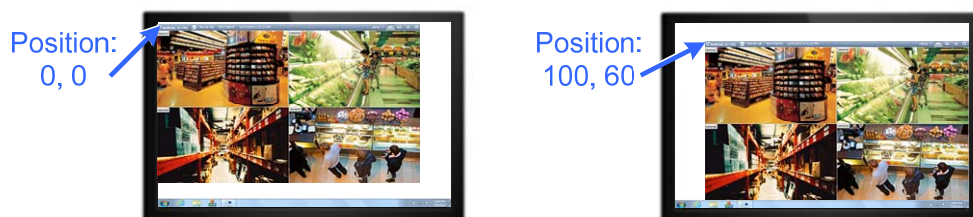
Figure 3-48

- ■ **Panel Resolution:** Sets the Panel Resolution of the GV-VMS.

3.13   Digital Matrix

Note this function is not available for **GV-Hot Swap VMS System V5, GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

To create more screen space to display multiple channels, such as 32 channels, Digital Matrix is thus introduced to provide a way to view and manage multiple monitor displays.

The Digital Matrix includes these features:

● **Live view:** You can set different live views and screen divisions for each monitor.

● **Automatic channel scan:** You can set up to 16 scanned pages with different screen divisions and channels for each monitor.

● **Pop-up Alert:** You can be alerted by pop-up live videos when motion is detected or I/O devices are triggered.

3.13.1   Activating Multiple Monitors

Use Windows Display Property to activate multiple monitors.

1. Follow Steps 1 to 6 in *3.11 Multi View Display* to configure the additional monitors.

2. Start the GV-System, click the **Configure** button, click **Accessories**, select **Digital Matrix Setting**, select monitors from the **Display** list and select **Activate** for each monitor. All monitors must be activated one by one.

3. Click **Apply**. Your additional monitors should now display the channels seen on the primary monitor.

3.13.2 Setting Live View

You can set different live views and screen divisions for each monitor.

1. On the main screen, click the **Configure** button, click **Accessories**, and select **Digital Matrix Setting**. This dialog box appears.
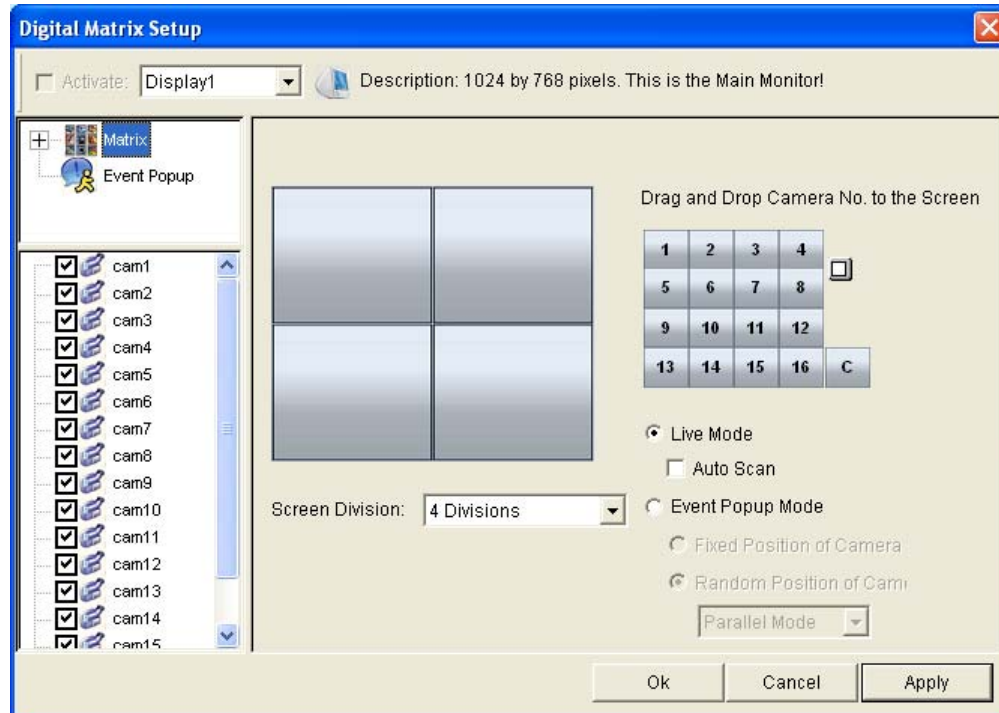
Figure 3-49

2. Use the **Display** list to select the monitor to be configured.

3. Select **Screen Division**.

4. Drag and drop the camera numbers to the desired positions on the divisions. To clear the assignment, drag and drop the "C" icon to that position.

5. Select **Live Mode**.

6. Repeat above steps to configure other monitors.

7. Click **OK** to apply the settings.

3.13.3 Setting Scanned Pages

You can set up to 16 scanned pages with different screen divisions and channels for each monitor.

1. Use the **Display** list to select the monitor to be configured.

2. In the upper-left column, expand the **Matrix** folder tree, and then click **Page 1**. This page appears.
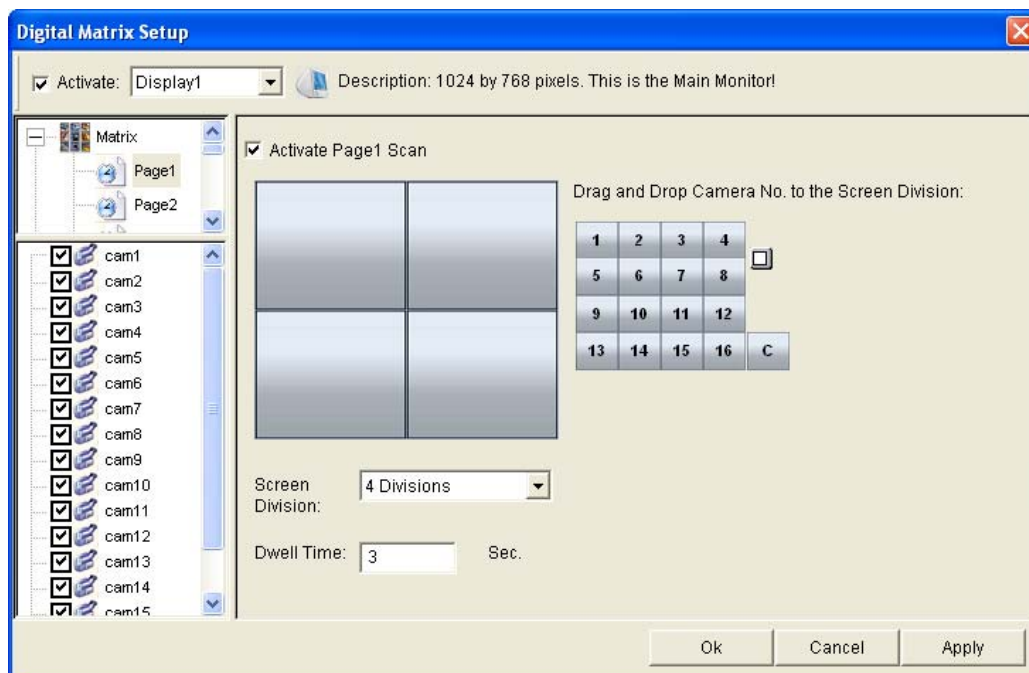
Figure 3-50

3. Select **Activate Page 1 Scan**.

4. Select **Screen Division**.

5. Drag and drop the camera numbers to the desired positions on the divisions. To clear the assignment, drag and drop the "C" icon to that position.

6. Specify **Dwell Time** for how long this scanned page remains on the monitor.

7. Repeat Steps 2 to 5 to configure more scanned pages for the specific monitor.

8. Repeat Steps 1 to 7 to configure scanned pages for other monitors.

9. In the upper-left column, click the **Matrix** icon and return to Figure 3-49.

10. Select **Auto Scan**.

11. Click **OK** to start scanning among pages.

![GeoVision logo]

3.13.4   Setting Pop-up Alert

You can be alerted by pop-up live videos when motion is detected or I/O devices are triggered.

1. Use the **Display** list to select the monitor to be configured.

2. In the upper-left column, click **Event Popup**. This page appears.
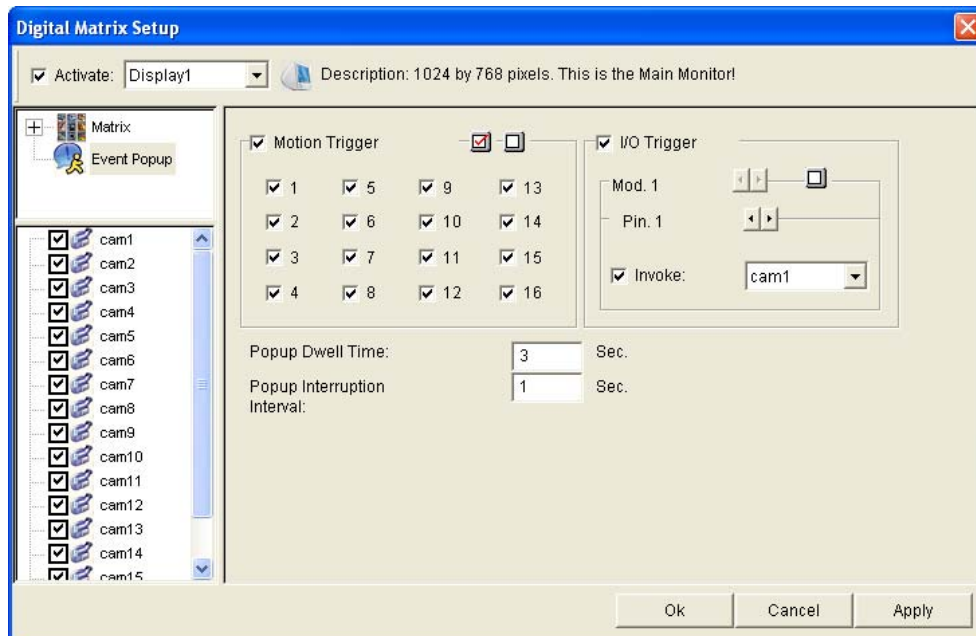
Figure 3-51

- **Motion Trigger:** The live video of selected cameras pops up when motion is detected.

- **I/O Trigger:** The live video of assigned camera pops up when the selected input device is triggered.

- **Popup Dwell Time:** Specify the amount of time that a pop-up live video remains in the foreground.

- **Popup Interruption Interval:** Specify the interval between camera pop-ups. This option is useful when several cameras are activated for pop-up alert at the same time.

3. Use the **Display** list to select other monitors for setup.

4. After above settings, click the **Matrix** icon and return to Figure 3-49.

5. Select **Event Popup Mode**. Then select **Fixed Position of Camera** or **Random Position of Camera**. For these two options, see *3.12.5 Setting Pop-up Positions*.

6. Click **OK**.

7. Start monitoring. When motion is detected or the input device is triggered, the live video will pop up for alert.

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3.13.5 Setting Pop-up Positions

When you select **Random Position of Camera**, you can decide the positions for pop-up cameras.

- **Fixed Position of Camera:** The cameras pop up in their assigned positions. To assign positions, select **Screen Division**. Then drag and drop the cameras number to the desired potions on the divisions.

- **Random Position of Camera:** The positions of pop-up cameras are based on the sequence order of triggers. There are two modes for this position:

  1. **Cascade Mode:** This mode can avoid the same cameras popping up on different monitors. This is suggested to be used when multiple monitors are placed close to each other.

     Example:

     Camera 1, Camera 2, Camera 3, Camera 4 and Camera 5 are assigned for pop-up alert on both Monitor 1 and Monitor 2. Monitor 1 is set at 4 screen divisions. When the five cameras are triggered at same time, the first 4 cameras show up on Monitor 1 and the 5th on Monitor 2.

  2. **Parallel Mode:** This mode allows the same cameras simultaneously pop up on different monitors. This is suggested to be used when multiple monitors are placed in separate rooms.

     Example:

     Camera 1, Camera 2, Camera 3 and Camera 4 are assigned for pop-up alert on both Monitor 1 and Monitor 2. When the four cameras are triggered at the same time, they will show up simultaneously on both Monitor 1 and Monitor 2.

3.13.6 Setting Live View with Pop-up Alert

You can set a different live view mode with pop-up alert together for each monitor. When alert events occur, the live video of the associated camera will pop up on the assigned monitor to replace its live view mode.

1. To configure live view mode, follow the instructions in *3.13.2 Setting Live View*.

2. To configure pop-up alert, in the upper left column, click **Event Popup**. Figure 3-38 appears.

3. Configure **Motion Trigger**, **I/O Trigger**, **Popup Dwell Time** and **Popup Interruption Interval** for each monitor. For details see *3.12.4 Setting Pop-up Alert.*

4. Click the **Matrix** icon and return to Figure 3-50. Ensure the **Live Mode** option is selected.

5. Click **OK**. The live view mode you configured for each monitor is displayed.

6. Start monitoring. When alert events occur, the associated camera will pop up on the desired monitor.

3.14   Extended Installation

Beyond basic installation, the GV-Hot Swap DVR/NVR V5 / GV-Hot Swap VMS package provides the GV-Keyboard and GV-IR Remote Control accessories to make your unit even more powerful and convenient. Optionally, you can purchase Graphic Cards for additional displays, Gigabit Network Cards for additional gigabit ports, and Redundant Power Supply for uninterrupted supply of power.

- GV-Keyboard
- GV-IR Remote Control
- Graphic Card
- Gigabit Network Card
- Redundant Power Supply

3.14.1   GV-Keyboard

Note that this function is not supported by **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

The GV-Keyboard is designed to operate the GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5 exclusively. Using the USB cable supplied with the GV-Keyboard, plug one end into the GV-Keyboard and the other end into any one of the USB ports on the back of the GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5; you can operate the Keyboard immediately without installing any drivers.

For details on the GV-Keyboard, find the *Installation Manual* included in its own package.

USB Cable

USB Port
GV-Hot Swap Surveillance System V5
Back Panel
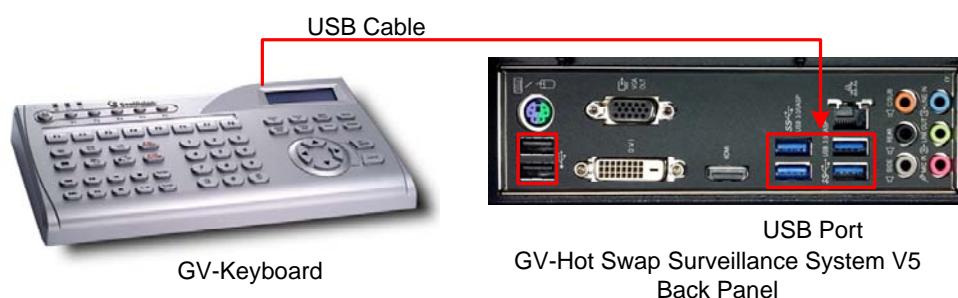
GV-Keyboard

Figure 3-52

Note: GV-Keyboard is not included for 3U (16 / 8-bay) models of GV-3008H V5.

After the GV-Hot Swap DVR/NVR V5 / GV-Hot Swap VMS V5 starts up, the Keyboard controller dialog box will automatically appear and start service. The dialog box will run in the background and closing the dialog box will cause GV-Keyboard to disconnect.
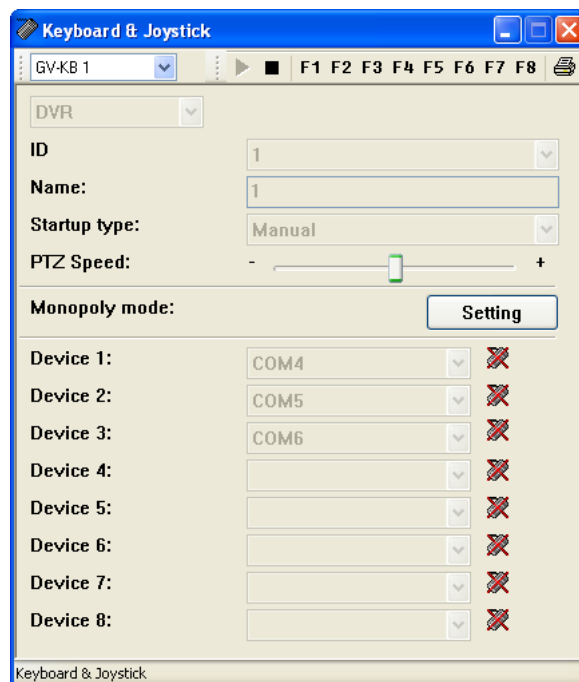
Figure 3-53

3.14.2   GV-IR Remote Control

Note that this function is not supported by **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

The GV-IR Remote Control provides easy control of the GV-Hot Swap DVR/NVR V5 and GV-Hot Swap VMS V5. Its receiver is built in all models.

For details, see *GV-IR Remote Control User's Manual* (GV-Desktop > **Program** button > **User Manual**).

GV-IR Remote Control   GV–Hot Swap DVR/NVR System V5

Figure 3-54

3.14.3   I/O Devices

Note that this function is not supported by **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

The GV-Hot Swap DVR/NVR V5 / GV-Hot Swap VMS V5, with built-in GV-NET/IO Card, provides 4 alarm outputs and 4 sensor inputs.

4U (20-bay) & 3U (16 / 8-bay)
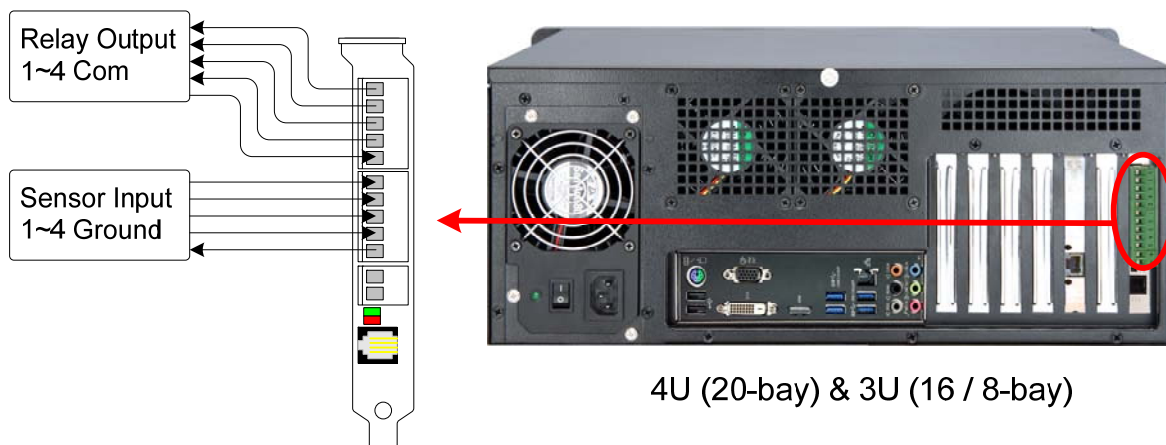
Figure 3-55

3.14.4　PTZ Domes

Note that this function is not supported by **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

You can connect PTZ domes to GV-Hot Swap DVR/NVR V5 using the RS-485± interface.

RS-485+

RS-485-

PTZ Dome 1

PTZ Dome 2

PTZ Dome 16

4U (20-bay) & 3U (16 / 8-bay)
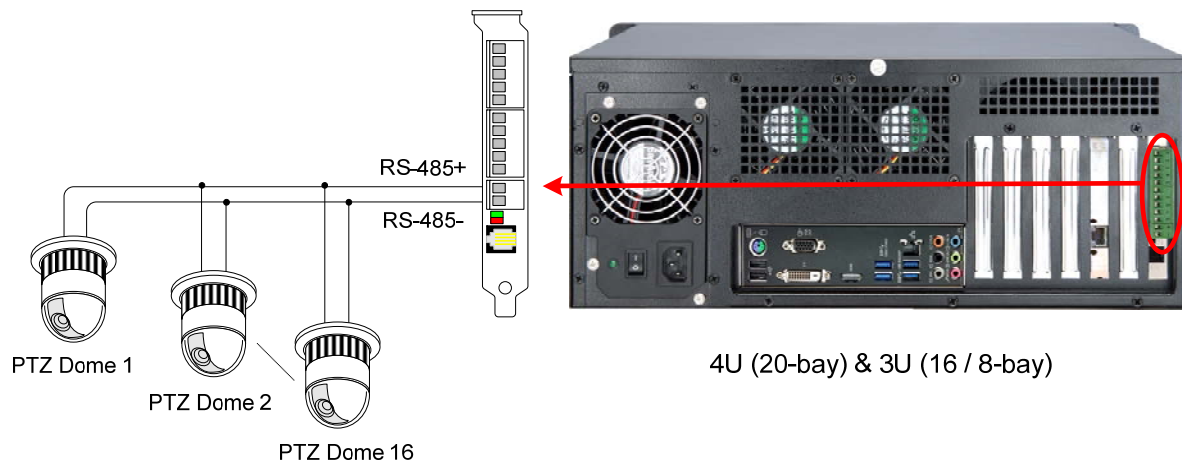
Figure 3-56

Note: The built-in RS-485± functions are not available for GV-SDI-204H V5, GV-5016H V5 and GV-NVRH V5. However, you can still use one of the methods below to connect RS-485 devices:

● Connect the GV-Hot Swap DVR/NVR V5 to IP devices, such as GV-Video Server or GV-Compact DVR, for accessing the PTZ functions over the Internet.

● Connect the GV-Hot Swap DVR/NVR V5 to a RS-485 device via an optional device GV-COM V2 or GV-Hub V2. For details, see *1.5 Options.*

3.14.5   Graphic Cards

The GV-Hot Swap Surveillance System comes with 3 built-in display ports: HDMI, DVI-D and VGA ports. Up to 3 monitors can be connected to the System. With 1 or 2 optional Graphic Cards installed in the GV-Hot Swap Surveillance System V5, you can choose 2 of 3 ports from each card and use all the 3 display ports on the motherboard to connect up to 7 monitors for display.

The number of optional Graphic Cards supported varies with different models and the number of GV-Capture Cards installed. Refer to the table below.

4U (20-bay) and 3U (16-bay) models

Models	Built-in Video Capture Cards	Optional Graphic Cards	Total Monitors Supported
GV-SDI-204H V5 GV-5016H V5	1	1	5
GV-1480H / 1240H / 1120H V5 GV-900H V5 GV-800H V5	2	Not Supported	3
GV-NVRH V5 / GV-VMSH V5	-	1	5
GV-Hot Swap Backup Center System	-	Not Supported	3
GV-Hot Swap Recording Server System	-	Not Supported	3

3U (8-bay) models

Models	Built-in Video Capture Cards	Optional Graphic Cards	Total Monitors Supported
GV-SDI-204H V5	1	2	7
	2	1	5
	3	Not Supported	3
GV-1480H / 1240H / 1120H V5	1	1	5
	2	Not Supported	3
GV-5016H V5 GV-900H V5 GV-800H V5	1	2	7
	2	1	5
GV-NVRH V5 / GV-VMSH V5	-	2	7
GV-Hot Swap Backup Center System	-	1	5
GV-Hot Swap Recording Server System	-	1	5

Note:

1. GV-3008H V5 models do not support optional graphic cards.

2. For details on combining options for your system, see *Appendix C. Combining Optional Accessories.*

5 Monitors

When a single Graphic Card is installed, up to 5 monitors can be connected. Connect all display ports on the motherboard and choose 2 of 3 ports from the Graphic Card for display connections.

Figure 3-57

7 Monitors

When dual Graphic Cards are installed, up to 7 monitors can be connected. Connect all display ports on the motherboard and choose 2 of 3 ports from each Graphic Card for display connections.
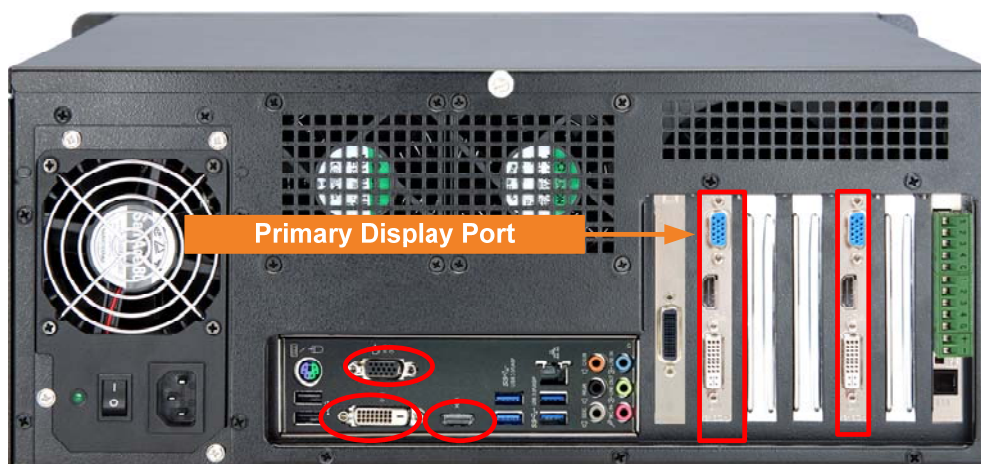
Figure 3-58

Note: When the unit is installed with Graphic Cards, the primary display port changes from the VGA port of the motherboard to the VGA port of the first Graphic Card. It is highly recommended to set the primary display port to the VGA port of the motherboard in order to get the best performance of fisheye dewarping.

3.14.6 Gigabit Network Cards

The GV-Hot Swap Surveillance System V5 comes with at least one onboard gigabit port. With 1 or 2 optional Network Cards installed, the System can support up to 5 gigabit ports.

The number of optional Network Cards supported varies with different models and the number of GV-Capture Cards installed. Refer to the table below.

4U (20-bay) and 3U (16-bay) models

Models	Built-in Video Capture Cards	Maximum Optional Network Cards	Total Gigabit Ports Supported
GV-SDI-204H V5 GV-5016H V5	1	1	3
GV-1480H / 1240H / 1120H V5 GV-900H V5 GV-800H V5	2	Not Supported	1
GV-NVRH V5 / GV-VMSH V5	-	2	5
GV-Hot Swap Backup Center System	-	1	5
GV-Hot Swap Recording Server System	-	2	5

3U (8-bay) models

Models	Built-in Video Capture Cards	Maximum Optional Network Cards	Total Gigabit Ports Supported
GV-SDI-204H V5	1	2	5
	2	1	3
	3	Not Supported	1
GV-1480H / 1240H / 1120H V5	1	2	4
	2	1	2
GV-5016H V5 **GV-900H V5** **GV-800H V5**	1	2	5
	2	1	3
GV-NVRH V5 / GV-VMSH V5	-	2	5
GV-Hot Swap Backup Center System	-	1	5
GV-Hot Swap Recording Server System	-	1	5

Note:

1. The following models do not support optional network cards: GV-3008H V5, 4U (20-bay) and 3U (16-bay) models with 2 built-in GV-Capture Cards or 3 built-in GV-SDI-204 Cards.

2. For the GV-NVRH V5 / GV-VMSH V5 / GV-Hot Swap Backup Center System / GV-Hot Swap Recording Server System 4U (20-bay) and 3U (16-bay) models to support 5 ports requires replacing the original single network card(s) with a (maximum of 2) dual network card(s) due to limited space of the expansion slots.

3. For details on combining options for your system, see *Appendix C. Combining Optional Accessories.*

3.14.7   Redundant Power Supply

The Redundant Power Supply comes with 2 modules for 3U models and 3 modules for 4U models. Each module shares the loading of the power supply. When one of the modules is down, the other module(s) can still support full power for the GV-Hot Swap Surveillance System V5.

4U models

Figure 3-59

3U models

Figure 3-60

The LED Indicators

4U models

Figure 3-61

3U models

Figure 3-62

LED Indicators	Color	Description
Ready LED	Orange	Glows when the power input is properly connected to the power supply.
Access LED	Green	Glows when the Redundant Power Supply is functioning.
Alarm LED	Red	Glows when the Redundant Power Supply is not functioning properly, accompanying the audio alarm's sound.

The Audio Alarm

When the audio alarm of the Redundant Power Supply rings, check:

1. if the modules are pushed all the way to the end, or

2. the power input is properly connected to the power supply.

If the modules are properly installed but the audio alarm continues to ring, the module may be damaged and you may need to contact your distributor for a replacement. To stop the ringing alarm sound, press the red button. To remove the module from GV-Hot Swap Surveillance System V5, push the release latch and pull out the entire module with the handle at the same time.

4U Models
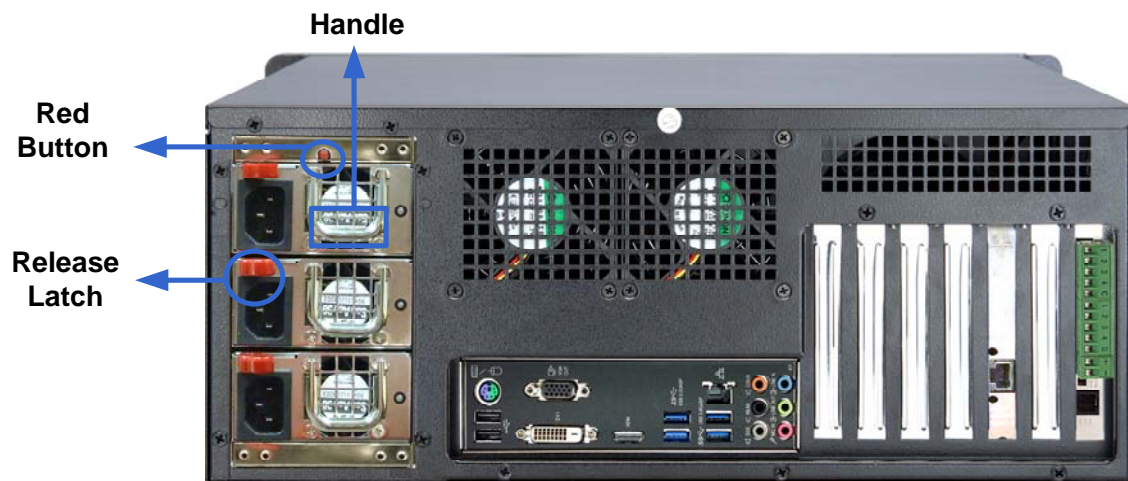
Figure 3-63

3U Models

Figure 3-64

3.15 System Restoration

3.15.1 Restoring the System

You can restore preinstalled files once they are damaged by running the recovery from the hidden partition. To restore the operating system and all preinstalled software, follow the steps below.

Note: After recovery, you need to re-install all settings and passwords. But the recovery will not delete your recording files saved on the GV-Hot Swap Surveillance System V5 since it only reformats the partition C and all of your files are still stored on other partitions.

---

1. Remove or turn off the power of any connected USB devices.

2. Turn off the power of all drive bays.

3. On the GV-Desktop, click the **Program** button and select **Recovery**. The system will run this command by itself.

Figure 3-65

4. Restart the GV-Hot Swap Surveillance System V5.

5. Press **F11** button several times to avoid accessing the system.

6. When this screen appears, click the **Recovery** button. Once the restoration is complete, click **Quit** to leave the recovery system and restart the Windows automatically.

Figure 3-66

For the recovery system part, see steps 1 – 6 in *3.4 Windows setup installation*.

3.15.2 Configuring the GV-Hot Swap DVR/NVR V5 for PAL

The default video standard after the system restoration is set to NTSC. If the video standard in your country is PAL, remember to configure the GV-Hot Swap DVR/NVR V5 for PAL.

1. Click the **Configure** button, point to **A/V Setting**, and then select **Video Source**.
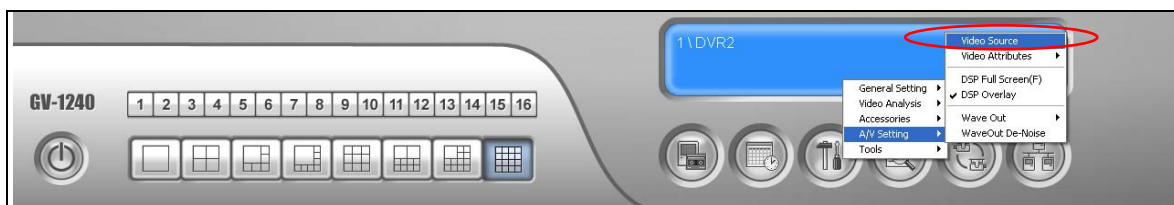
Figure 3-67

2. In the Video Standard field, select **PAL** from the drop-down list, and click **OK**.
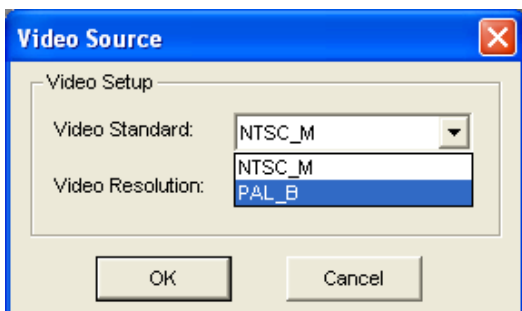
Figure 3-68

3.16 Updating GV-Hot Swap Surveillance System V5

GeoVision will periodically update the GV-System Software (Multicam Surveillance System). If you like to update your GV-Hot Swap Surveillance System V5, contact your dealer for more information or check software update news at our website:

http://www.geovision.com.tw/english/5_8.asp

Chapter 4   DVR Health Analysis

Note this function is not supported by **GV-Hot Swap Recording Server System / GV-Hot Swap Backup Center System**.

GeoVision offers health analysis to GV-Hot Swap DVR/NVR System V5 and GV-Hot Swap VMS System V5. The service is intended to give diagnosis for early and immediate detection of problems.

It is recommended to have the health analysis during the first week after you install the GV-Hot Swap DVR/NVR System V5 / GV-Hot Swap VMS System V5 and then have the checkup every three months. It will take 5 working days for response.

Please prepare the following data for analysis, and send to dvrsystem@geovision.com.tw

- **System Settings**
- **System Log**
- **Information of your computer system (Processor; Drives; Voltage, Temperature and Fans)**

4.1   System Settings

Please back up your system configurations using the **Fast Backup and Restore** application.

1. Run **Fast Backup & Restore Main System** from the Start menu.
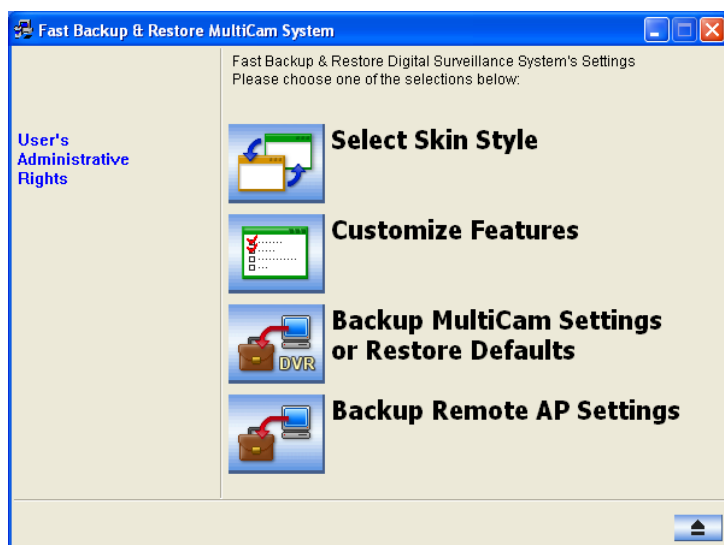
Figure 4-1

2. Select **Backup MultiCam Settings or Restore Defaults**, and select **Backup Current System**. This dialog box appears.
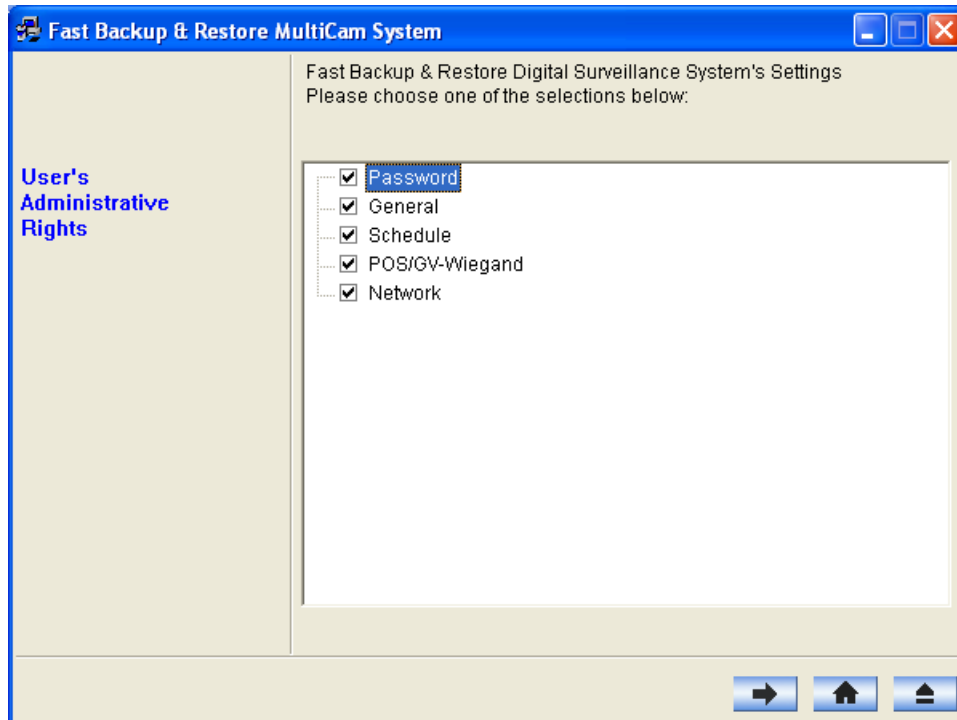
Figure 4-2

3. Press the **Next Step** button [→] to back up all your system settings. The Save As dialog box appears.

4. Select the destination drive to store the backup file. When the backup is complete, this message "*Successfully Backup MultiCam System Settings*" will appear.

4.2   System Log

Please provide the **sys*.mdb** files of system log. The files by default are saved at **D:\GV folder\database** (GV-Hot Swap DVR/NVR System V5) or **D:\Log\Database** (GV-Hot Swap VMS System V5). If you have modified the default location, you can check the path by the following steps:

For GV-Hot Swap DVR/NVR System V5

1. Click the **Configure** button on the Main System, select **System Configure**, and then select **System Log Setting**. This dialog box appears.
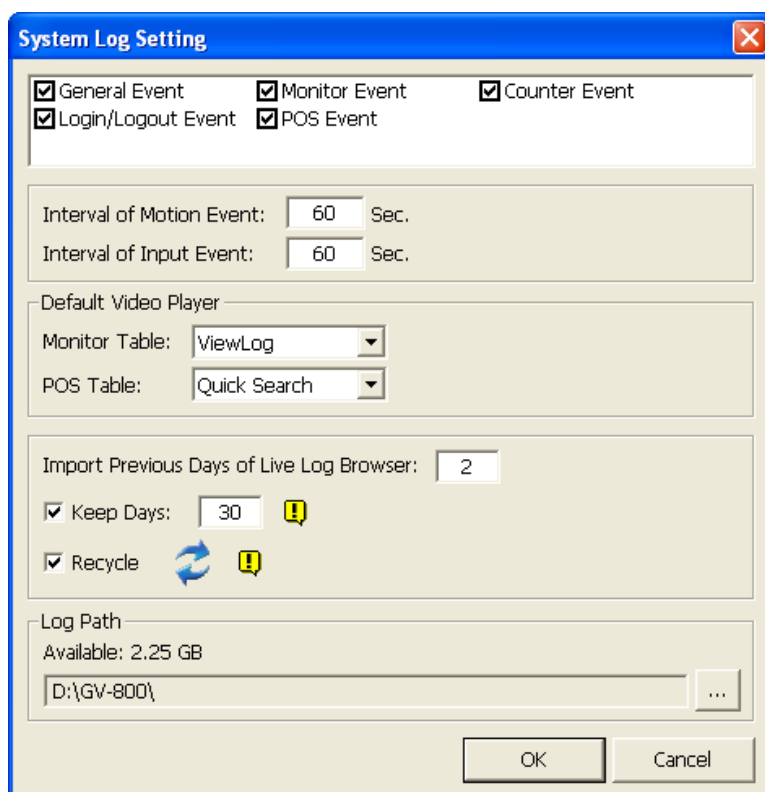
Figure 4-3

2. The location of your system log is listed after **Log Path**.

For GV-Hot Swap VMS V5

1. Click **ViewLog** button ![icon], select **Toolbar** ![icon], select **Configure** ![icon], and then select **System Log Setting**. This dialog box appears.
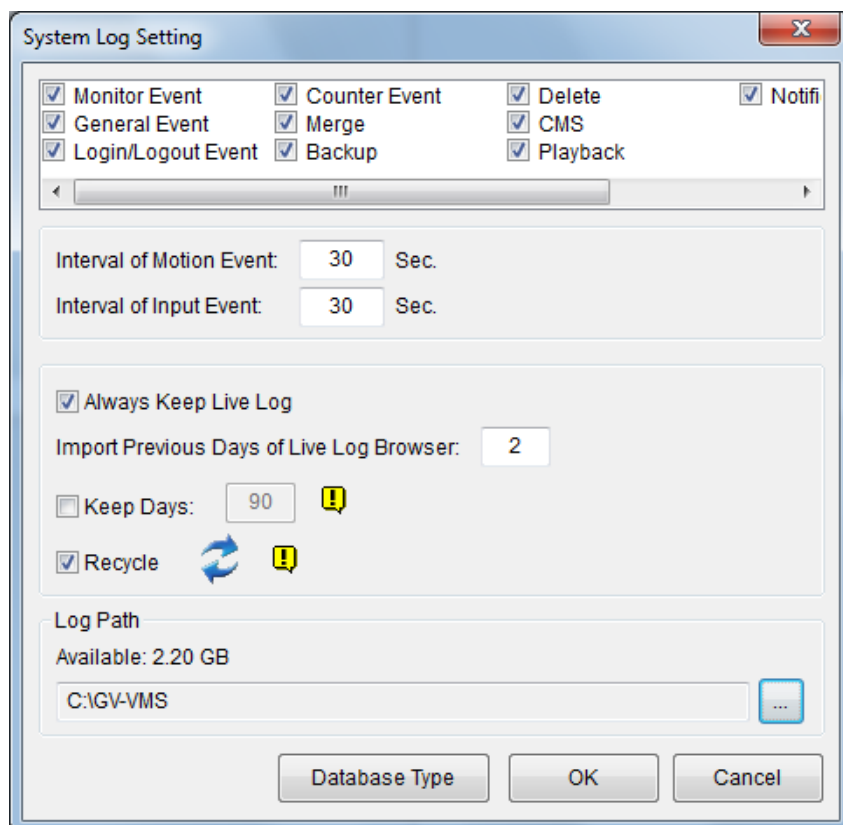
Figure 4-4

2. The location of your system log is listed after **Log Path**.

4.3   Information of Your Computer System

To get the information of your computer system, please follow the steps below to install the free software PC WIZARD. By using the software, the following computer information can be easily collected and saved for analysis:

- **Processor:** includes Type, Frequency, Data Cache L1, Trace Cache L1, Cache L2, Voltage, Processor Temperature, FPU Coprocessor.
- **Drives:** includes Number of Hard Disk, Number of Drive, Total Size and Free Space of Drive.
- **Voltage, Temperature and Fans:** includes Monitoring Chip, Voltage CPU, Chassis Fan, Processor Temperature, Mainboard Temperature, Hard Disk Temperature.

1. Download and install **PC WIZARD** from http://www.cpuid.com/pcwizard.php .
2. After installation, run the program.
3. Right-click the **Processor** icon and click **Save as**.
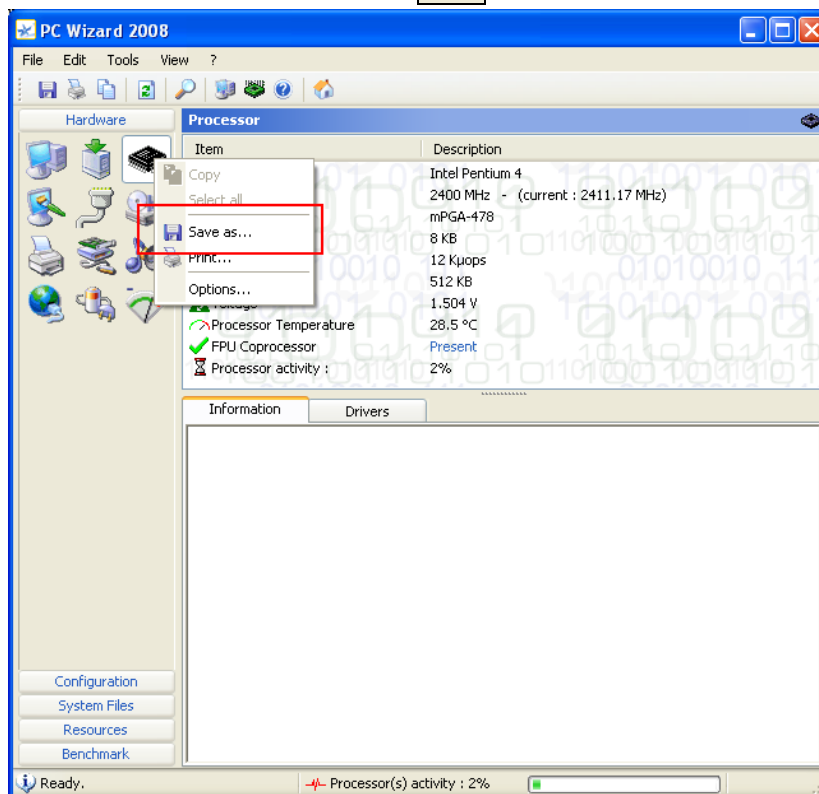
Figure 4-5

4. In the Save As dialog box, select **Format HTML** and click **OK**.
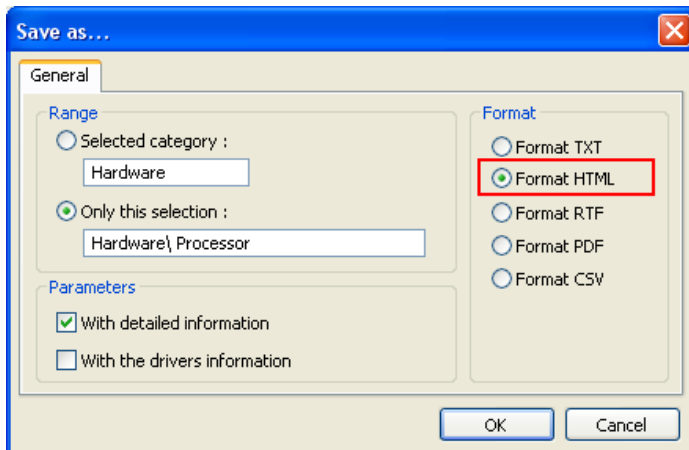
Figure 4-6

5. Select the Save location, type the file name, and then click **Save** to save the Processor information as HTML file.

6. Repeat Steps 3-5 to save the **Drives** information as HTML file.

7. To save the **Voltage, Temperature and Fans** information, please follow these steps:

   A. Click the **Voltage, Temperature and Fans** icon. The related data is displayed at the right window.

   B. Click the first item **Monitoring Chip**.

   C. Click **Edit** on the menu bar and click **Select All** to highlight all the contents.

   D. Click **Edit** on the menu bar and select **Copy**.

   E. Open a Notepad. Paste and save the information to TXT file.

4.4   Health Analysis Form

Please send the related data for analysis along with this Health Analysis Form to
dvrsystem@geovision.com.tw.

Health Analysis of **GV-Hot Swap DVR/NVR System V5 or GV-Hot Swap VMS System V5**	
Contact Person: **Title:**	
Company Name:	
Telephone: (O) **(H)**	
Fax:	
E-Mail:	
Model:	
Bar Code:	

4.5   Check List

Read this check list before submitting the health analysis request:

- System Settings- **EXE file**
- System Log- **sys*.mdb**
- Computer System- Processor information of **HTML file**
- Computer System- Drives information of **HTML file**
- Computer System- Voltage, Temperature and Fans information of **TXT file**
- Health Analysis Form

Chapter 5   Troubleshooting

GV-Hot Swap Surveillance System V5 is designed for durability. However, should problems occur, following the procedures here can help determine the cause.

A portable 2.5" HDD connected to the front panel cannot be detected.
When the portable 2.5" HDD connected to a GV-Hot Swap Surveillance System V5 cannot be detected, try this step:

Use a dual head USB cable and insert both heads to the USB ports on the GV-Hot Swap Surveillance System V5 front panel as illustrated below.

4U (20-Bay) Models
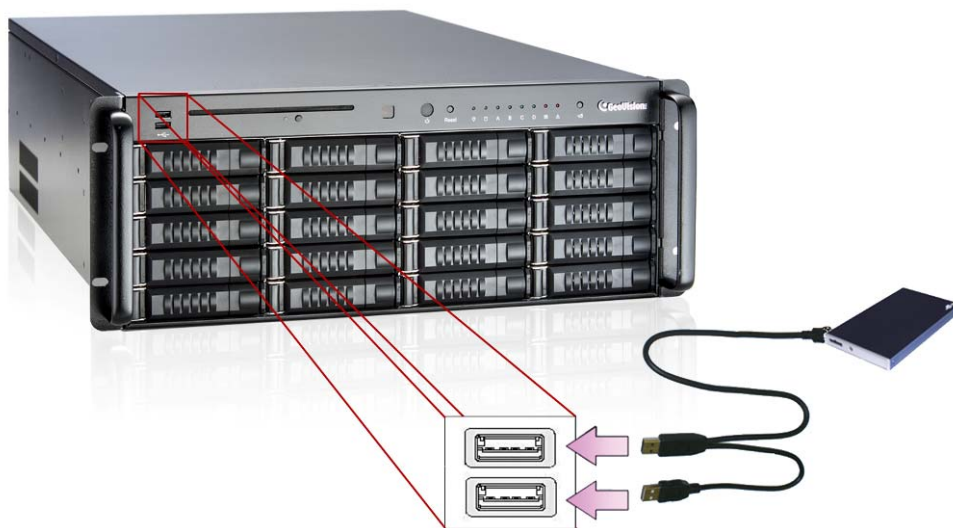
Figure 5-1

GV-Hot Swap Surveillance System V5 won't turn on.

If your GV-Hot Swap Surveillance System V5 won't turn on or you don't hear a startup sound or any fan or drive noise, try these steps:

1. For 4U (20-bay) models, make sure that you switch on the AC power on the rear panel.

    4U (20-Bay) Models
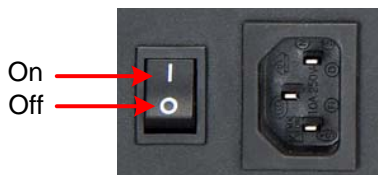
    Figure 5-2

2. Make sure that the power cord is properly connected to both GV-Hot Swap Surveillance System V5 and power outlet. If you are using a power strip, make sure that the strip is powered on.

3. If the problem persists, consult your dealer.

GV-Hot Swap Surveillance System V5 stops responding (aka "crashed" or "froze").

If your GV-Hot Swap Surveillance System V5 is not responding to your clicking, typing, or mouse movements, try these steps to get your GV-Hot Swap Surveillance System V5 back on track. Please note that you will lose any unsaved changes in all open applications.

1. Restart your GV-Hot Swap Surveillance System V5 by pressing the **Reset** button on the front panel.

2. If your GV-Hot Swap Surveillance System V5 is still unresponsive, switch off the **Power** button to shut it down. Wait 30 seconds and then restart your GV-Hot Swap Surveillance System V5.
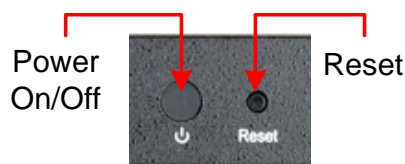
    Figure 5-3

GV-Hot Swap Surveillance System V5's hard disk corrupts.

If you are experiencing file system corruption problems, such as lost clusters, cross-linked files or invalid files or directories, try these steps:

1. Use the **HD Tune** utility to scan the hard disk for errors. Follow these steps:

   A. Download and install **HD Tune** from http://www.hdtune.com/

   B. Click the **Error Scan** tab and click **Start** to scan. Any found defects will be shown as red blocks.
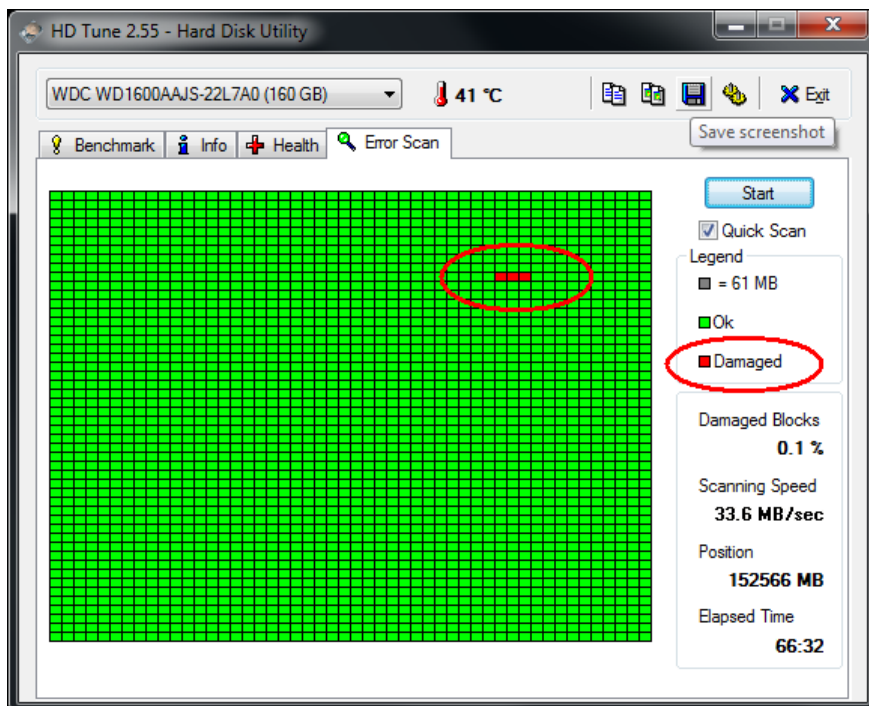
Figure 5-4

   C. If your hard disk drive is damaged, replace a new one.

2. If the HD Tune utility does not find any defects, use the Windows built-in utility to attempt to fix the errors. Follow these steps:

    A. On the GV-Desktop, click the **Programs** button, and select **Disk Management**. See Figure 3-11.

    B. Right-click the desired hard disk and select **Properties** from the file menu to display the Properties window.
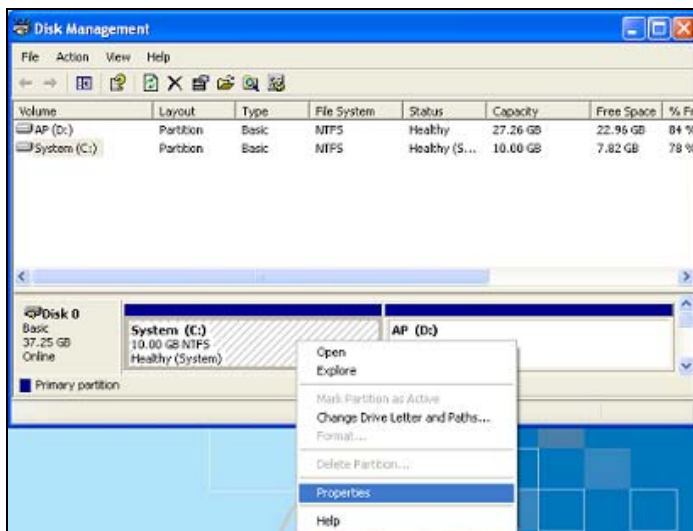
Figure 5-5

    C. Click the **Tools** tab in the upper portion of the window.

    D. Under Error-checking, click the **Check Now** button.
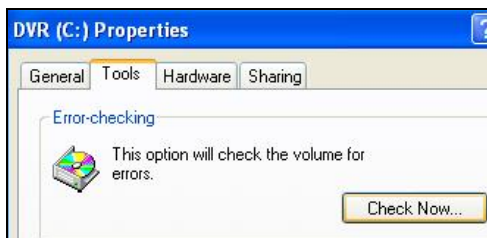
Figure 5-6

    E. Select **Automatically fix file system errors** and **Scan for and attempt recovery of bad sectors**.
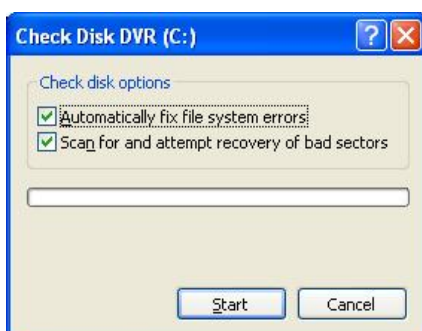
Figure 5-7

    F. Click **Start**.

3. If the Windows hard disk utility still cannot fix the problem in Partition C, try rebuilding the operating system and GV-System Software. Refer to *3.15.1 Restoring the System* .

4. If the problem persists, replace a hard disk drive.

GV-Hot Swap Surveillance System V5 suffers virus attack.

GV-Hot Swap Surveillance System V5 is designed and optimized for Windows 7 platform. It may be vulnerable to newly created worms and exploits that attack any of the underlying operating system's previously undocumented flaws. If your GV-Hot Swap Surveillance System V5 suffers virus attack, try rebuilding the operating system and the software. Refer to *3.14.1 Restoring the System.*

GV-Hot Swap DVR/NVR V5 has video and/or audio lost.

If your GV-Hot Swap DVR/NVR V5 fails to show video, audio or both, try these steps:

1. Check the video/audio connection. Make sure one end of the D-type video/audio cable is securely connected to the video/audio device, and the other end to the video/audio port of the GV-Hot Swap DVR/NVR V5.

2. Make sure the video/audio device is turned on.

3. Switch the cable from the functional channel to the non-functional channel, and vice versa. If the previously non-functional channel is now able to deliver video/audio, you should check the video/audio device itself and its related cables.

The screen image appears distorted or jitters.

If the screen image seems to be distorted, jitter, or not to look right, try these steps:

1. Make sure the video standard in your country matches the setting in the GV-Hot Swap Surveillance System V5. Refer to *3.14.2 Configuring the GV-Hot Swap DVR/NVR V5 for PAL.*

2. Make sure the camera and its cable are not damaged or frayed. Try to replace a camera or camera cable to see if this fixes the problem.

How can I find more help?

1. Visit our website at http://www.geovision.com.tw/english/4_1.asp

2. Write us at dvrsystem@geovision.com.tw

Specifications

GV-Hot Swap DVR/NVR System V5 / GV-Hot Swap VMS System V5 (Rev. B)

System (all models except GV-3008H V5)

Model		4U	3U	
		20-bay	16-bay	8-bay
CPU		Intel Core i7 Processor		
RAM		4 GB Dual Channels (GV-DVR/NVRH V5); 8 GB Dual Channels (GV-VMSH V5)		
OS		64-bit Windows Embedded Standard 7		
DirectX		11		
No. of HDD		20 (3.5" HDD)	16 (3.5" HDD)	8 (3.5" HDD)
Internal Storage		500 GB (3.5" HDD)	500 GB (2.5" HDD)	500 GB (3.5" HDD)
Connector	Ethernet	RJ-45, 10 / 100 / 1000 Mbps x 1		
	Video Output	3 displays with outputs VGA, DVI-D (DVI-D signal Only) and HDMI		
	USB 2.0	Front: 2 ports, Rear: 2 ports		
	USB 3.0	Rear: 4 ports		
DVD (±) RW	Slim	8X	8X	
Fan	12 cm (4 3/4")	3 units	-	
	8 cm (3 1/8")	2 units	4 units	
Power		Output: 1000 W Input: 100-240 V, 47-63 Hz	Output: 550 W Input: 100-240 V, 47-63 Hz	Output: 400 W Input: 100-240 V, 47-63 Hz

System (GV-3008H V5)

Model		4U	3U	
		20-bay	16-bay	8-bay
CPU		AMD 6-Core Processor		
RAM		4 GB Dual Channels		
OS		64-bit Windows Embedded Standard 7		
DirectX		11		
No. of HDD		20 (3.5" HDD)	16 (3.5" HDD)	8 (3.5" HDD)
Internal Storage		500 GB (3.5" HDD)	500 GB (2.5" HDD)	500 GB (3.5" HDD)
Connector	Ethernet	RJ-45, 10 / 100 / 1000 Mbps x 2		
	Video Output	2 displays from any of 3 outputs VGA, DVI-D (DVI-D signal Only) and HDMI		
	USB 2.0	Front: 2 ports, Rear: 4 ports		
	USB 3.0	Rear: 2 ports		
DVD (±) RW	Slim	8X	8X	
Fan	12 cm (4 3/4")	3 units	-	
	8 cm (3 1/8")	2 units	4 units	
Power		Output: 1000 W Input: 100-240 V, 47-63 Hz	Output: 550 W Input: 100-240 V, 47-63 Hz	Output: 400 W Input: 100-240 V, 47-63 Hz

Video and Audio (GV-5016H / GV-1480H / GV-1240H / GV-1120H / GV-900H / GV-800H V5)

Model		GV-5016H V5	GV-1480H V5	GV-1240H V5	GV-1120H V5	GV-900H V5	GV-800H V5
Video Standard		NTSC, PAL					
Video Input		16 / 32 channels					
Video Input Level		0.5 ~ 1.5 Vp-p (± 10%) composite, 75 Ω					
Audio Input		16 / 32 channels				8 / 16 channels	4 / 8 channels
Audio Input Level		0.5 ~ 1.5 Vp-p (± 10%) composite					
Video Loop Output (Optional)		N/A	16 / 32 channels			N/A	
Video Compression	H/W	H.264	Geo MPEG4, Geo H.264				
	S/W	Geo MPEG4, Geo H.264					
Audio Compression Format		16 kHz / 16-bit, 32 kHz / 16-bit					
Display Rate at D1 (Max)	NTSC	480 / 960 fps				120 / 240 fps	60 / 120 fps
	PAL	400 / 800 fps				100 / 200 fps	50 / 100 fps
Recording Rate at D1 (Max)	NTSC	HW: 480 / 960 fps	SW: 480 / 960 fps	SW: 240 / 480fps	SW: 120 / 240 fps	SW: 120 / 240 fps	SW: 60 / 120 fps
	PAL	HW: 400 / 800 fps	SW: 400 / 800 fps	SW: 200 / 400 fps	SW: 100 / 200 fps	SW: 100 / 200 fps	SW: 50 / 100 fps
Video Resolution	NTSC	HW: 704 x 480 / SW: 352 x 240	320 x 240 / 352 x 240 640 x 480 / 640 x 480 De-interlace 704 x 480 / 704 x 480 De-interlace				
	PAL	HW: 704 x 576 / SW: 352 x 288	320 x 240 / 352 x 288 640 x 480 / 640 x 480 De-interlace 704 x 576 / 704 x 576 De-interlace				

Video and Audio (GV-3008H V5)

Model		GV-3008H V5
Video Standard		NTSC, PAL
Video Input		8 / 16 channels
Video Input Level		1.0 Vp-p (± 10%) composite, 75 Ω
Audio Input		8 / 16 channels
Audio Input Level		0.5 ~ 1 Vp-p (± 10%) composite
Video Loop Output (Optional)		8 / 16 channels
Video Compression	H/W	H.264
	S/W	Geo MPEG4, Geo H.264

Audio Compression Format			16 kHz / 16-bit
Display Rate at D1 (Max)	**NTSC**		240 / 480 fps
	PAL		200 / 400 fps
Recording Rate at D1 (Max)	**NTSC**		HW: 240 / 480 fps
	PAL		HW: 200 / 400 fps
Video Resolution	**NTSC**	**HW**	704 x 480
		SW	352 x 240
	PAL	**HW**	704 x 576
		SW	352 x 288

Video (GV-SDI-204H V5)

Model				**GV-SDI-204H V5**
Video Standard				NTSC, PAL
Video Input				4 / 8 / 12 channels
Video Input Level				0.5 ~ 1.5 Vp-p (± 10%) composite, 75 Ω
Video Loop Output (Optional)				N/A
Video Compression	**H/W**			H.264
	S/W			Geo MPEG4, Geo H.264
Recording Rate and Display Rate (Max)	**1080p**	**NTSC**		120 / 240 / 360 fps
		PAL		100 / 200 / 300 fps
	720p	**NTSC**		240 / 480 / 720 fps
		PAL		200 / 400 / 600 fps
	1080i	**NTSC**		120 / 240 / 360 fps
		PAL		100 / 200 / 300 fps
Video Resolution	**H/W**	**1080p**		1920 x 1080
		720p		1280 x 720
		1080i		1920 x 1080
	S/W	**1080p**		960 x 540, 480 x 270
		720p		640 x 360
		1080i		960 x 540, 480 x 270
Note: Only 3U (8-bay) models support 12 channels of video input.				

Video and Audio (GV-NVRH V5)

Model	**GV-NVR (GV)**	**GV-NVR (3rd Party)**
Video Input	32 channels	1, 2, 4, 6, 8, 10, 12, 16, 18, 20, 22, 24, 26, 28, 30, 32 channels
Audio Input	32 channels	1, 2, 4, 6, 8, 10, 12, 16, 18, 20, 22, 24, 26, 28, 30, 32 channels

Video and Audio (GV-VMSH V5)

Model	GV-VMS	GV-VMS (Pro)
Video Input	32 channels	64 channels
Audio Input	32 channels	64 channels

Live View and Playback

Image Control	Contrast / Brightness / Saturation / Hue
Recording Mode	Round the Clock / Motion Detection / Sensor Detection / Pre & Post Recording / Schedule Recording
Pre Recording	1 ~ 45 min.
Instant Playback	10 sec. / 30 sec. / 1 min. / 5 min.
Watermark Marking	Supported

Search and Backup

Search Method	Date / Time / Camera / Event Type
Backup Type	DVD+R (DL) / DVD-R (DL) / DVD+R / DVD+RW / DVD-R / DVD-RW / CD-R / CD-RW

Remote Monitoring

Network Type	LAN, WAN, Internet
Monitoring Environment	Web browser (IE, Chrome, Firefox and Safari) Mobile device (Android Smartphone and tablet; iPad, iPhone and iPod Touch)
WebCam Live View	Max. 32-channel Multi Views (Max. 200 channels connecting to GV-Hot Swap DVR/NVR V5)

System Monitoring and Recovery

Power Restoration	Automatic restart after power outage
Monitoring	Two independent Watchdogs (Hardware Watchdog + Software Watchdog)
Recovery	Automatic system rebuild from internal hard disk

Alarm

Sensor Input	Standard	4 inputs
	GV-IO 12-In Card (Optional)	12 inputs
	GV-IO Box (Optional)	4, 8, 16 inputs
Alarm Output	Standard	4 outputs
	GV-IO 12-Out Card (Optional)	12 outputs
	GV-IO Box (Optional)	4, 8, 16 outputs

Peripheral Devices (GV-5016H / GV-3008H / GV-1480H / GV-1240H / GV-1120H / GV-900H / GV-800H V5)

Audio Input	RCA 8 / 16 / 32 ports
Audio Microphone In	Mini stereo jack
Audio Output	Mini stereo jack
RS±485 for PTZ Control	2-pin terminal
Note:	
1. The built-in RS±485 for PTZ Control is not available for GV-SDI-204H V5, GV-5016H V5 and GV-NVRH V5.	
2. 32-port audio input is not supported for GV-3008H V5.	

Environment

Operating Temp.	0 ~ 45 °C / 32 ~ 113 °F
Humidity	0 ~ 80% RH (non-condensing)

Physical

LED Indicator			Yes (Fan, Power, HDD)
Color			Black
Dimensions (W x H x D)	4U	20-bay	483 x 178 x 660.4 mm / 19 x 7 x 26 in
	3U	16-bay	483 x 132.5 x 650 mm / 19 x 5.2 x 25.5 in
		8-bay	483 x 132.5 x 580 mm / 19 x 5.2 x 22.8 in
Net Weight	4U	20-bay	24 kg / 52.8 lb (± 1 kg / 2.2 lb)
	3U	16-bay	19 Kg / 41.8 lb (± 1 kg / 2.2 lb)
		8-bay	18Kg / 39.6 lb (± 1 kg / 2.2 lb)

Language (GV-NVRH V5)

Type	Arabic / Bulgarian / Czech / Danish / Dutch / English / Finnish / French / German / Greek / Hebrew / Hungarian / Indonesian / Italian / Japanese / Lithuanian / Norwegian / Persian / Polish / Portuguese / Romanian / Russian / Serbian / Simplified Chinese / Slovakian / Slovenian / Spanish / Swedish / Thai / Traditional Chinese / Turkish

Language (GV-VMSH V5)

Type	Bulgarian / Czech / Danish / English / French / German / Greek / Hebrew / Hungarian / Italian / Japanese / Persian / Polish / Portuguese / Russian / Serbian / Simplified Chinese / Slovakian / Slovenian / Spanish / Traditional Chinese / Turkish

Hard Disk Requirements

The total of recording frame rates that you can assign to a single hard disk is listed as below:

Frame rate limit in a single hard disk when connecting to analog cameras

Analog Cameras / SW Compression		
Video Resolution	MPEG4	
	NTSC	PAL
CIF	960 FPS	800 FPS
VGA/D1	480 FPS	400 FPS
Turbo VGA	416 FPS	400 FPS
Turbo D1	352 FPS	320 FPS

Analog Cameras / HW Compression		
Video Resolution	H.264	
	NTSC	PAL
D1	480 FPS	400 FPS

Frame rate limit in a single hard disk when connecting to IP cameras

IP Cameras				
Video resolution	H.264		MJPEG	
	Frame Rate	Bitrate	Frame Rate	Bitrate
5 MP (2560 x 1920)	220 FPS	8.5 Mbit/s	80 FPS	30.4 Mbit/s
4 MP (2048 x 1944)	330 FPS	10.4 Mbit/s	105 FPS	40.53 Mbit/s
3 MP (2048 x 1536)	440 FPS	9.83 Mbit/s	140 FPS	38.67 Mbit/s
2 MP (1920 x 1080)	660 FPS	12.59 Mbit/s	210 FPS	44.93 Mbit/s
1.3 MP (1280 x 1024)	660 FPS	6.16 Mbit/s	300 FPS	32.26 Mbit/s

Frame rate limit in a single hard disk when connecting to SDI cameras

Hardware Compression		
Video Resolution	H.264	
	NTSC	PAL
1080p	360 FPS	300 FPS
1080i	360 FPS	300 FPS
720p	720 FPS	600 FPS

Note: The above data was determined using the bitrate listed above and hard disks with average R/W speed above 110 MB/s.

GV-Hot Swap Recording Server System V5 (Rev. B)

System

Model		4U	3U	
		20-bay	**16-bay**	**8-bay**
CPU		Intel Core i7 Processor		
RAM		16 GB Dual Channels		
OS		64-bit Windows Embedded Standard 7		
DirectX		11		
No. of HDD		20 (3.5" HDD)	16 (3.5" HDD)	8 (3.5" HDD)
Internal Storage		500 GB (3.5" HDD)	500 GB (2.5" HDD)	500 GB (3.5" HDD)
Connector	**Ethernet**	RJ-45, 10 / 100 / 1000 Mbps x 3		
	Video Output	3 displays with outputs VGA, DVI-D (DVI-D signal Only) and HDMI		
	USB 2.0	Front: 2 ports, Rear: 2 ports		
	USB 3.0	Rear: 4 ports		
DVD (±) RW	**Slim**	8X	8X	
Fan	**12 cm (4 3/4")**	3 units	-	
	8 cm (3 1/8")	2 units	4 units	
Power		Output: 1000 W Input: 100-240 V, 47-63 Hz	Output: 550 W Input: 100-240 V, 47-63 Hz	Output: 400 W Input: 100-240 V, 47-63 Hz

Physical

LED Indicator			Yes (Fan, Power, HDD)
Color			Black
Dimensions (W x H x D)	4U	**20-Bay**	483 x 178 x 660.4 mm / 19 x 7 x 26 in
	3U	**16-Bay**	483 x 132.5 x 650 mm / 19 x 5.2 x 25.5 in
		8-Bay	483 x 132.5 x 580 mm / 19 x 5.2 x 22.8 in
Weight	4U	**20-Bay**	23.5 kg / 51.8 lb (± 1 kg / 2.2 lb)
	3U	**16-Bay**	18.5 Kg / 40.7 lb (± 1 kg / 2.2 lb)
		8-Bay	17.5 Kg / 38.5 lb (± 1 kg / 2.2 lb)

Software Specifications

Number of IP Video Device Connections	128 channels
Number of Remote Client Connections	300 channels
Active Connections	Yes
Passive Connections	Yes (only for GV-IP Devices)
3rd Party IP Cameras Support	Yes
Live Viewing	Single live view, multi-channel live view
Recording	Yes (up to 128 channels)
Protocol	HTTP, HTTPS, TCP, UDP, SMTP, UPnP, DynDNS, RTSP, PSIA, ONVIF
E-Mail Notification	Yes (for Active connection lost, passive connection lost, USB protection key removed, recycling of recorded video, start keep days operation, motion detection, disk full, disk error, I/O trigger, recording failure, disk removed)
SMS Notification	No
2-Way Audio	Yes (only for GV-IP Devices through active connection)
GPS support	Yes (only for GV-IP cameras)
Number of Accounts	Up to 1000 accounts
Mobile Phone Support	No
Bandwidth Control	No
IE Live View	Yes (up to 36 channels)
IE Event Query	Yes
IE I/O Control	No

Language

Type	Arabic / Bulgarian / Czech / Danish / Dutch / English / Finnish / French / German / Greek / Hebrew / Hungarian / Indonesian / Italian / Japanese / Lithuanian / Norwegian / Persian / Polish / Portuguese / Romanian / Russian / Serbian / Simplified Chinese / Slovakian / Slovenian / Spanish / Swedish / Thai / Traditional Chinese / Turkish

HDD Capacity

The amount of time GV-Hot Swap Recording Server System can record before recycling begins is listed below.

Resolution	Frame rate	Bit rate	HDD capacity required for recording 128ch	HDD Capacity for each model	Amount of time each model can record before recycling begins
1.3 MP	30 fps	3.7 Mbps	5.3 TB per 24 hr	8-bay (48 TB)	48 TB / 5.3 TB = **9 days**
				16-bay (96 TB)	96 TB / 5.3 TB = **18 days**
				20-bay (120 TB)	120 TB / 5.3 TB = **22 days**
2 MP	30 fps	6.7 Mbps	9.3 TB per 24 hr	8-bay (48 TB)	48 TB / 9.3 TB = **5 day**
				16-bay (496 TB)	96 TB / 9.3 TB = **10 days**
				20-bay (120 TB)	120 TB / 9.3 TB = **12 days**
3 MP	20 fps	5.7 Mbps	7.9 TB per 24 hr	8-bay (48 TB)	48 TB / 7.9 TB = **6 days**
				16-bay (96 TB)	96 TB / 7.9 TB = **12 days**
				20-bay (120 TB)	120 TB / 7.9 TB = **15 days**

Maximum Number of Channels per HDD

	1.3 MP	2 MP	3 MP
20-Bay	32 Channels	21 Channels	32 Channels
16 / 8-Bay	28 Channels	16 Channels	24 Channels

Note:

1. The HDD Capacity and the Maximum Number of Channels per HDD were obtained using H.264 codec with the following bit rate:
   - 3.7 Mbps for 1.3 MP
   - 6.7 Mbps for 2 MP
   - 5.7 Mbps for 3 MP
2. To see the recommended hard disk requirements, refer to the *GV-Recording Server User's Manual* in the path C:\UserManual.

GV-Hot Swap Backup Center System V5 (Rev. B)

System

Model		4U	3U	
		20-bay	16-bay	8-bay
CPU		Intel Core i7 Processor		
RAM		4 GB Dual Channels		
OS		64-bit Windows Embedded Standard 7		
DirectX		11		
No. of HDD		20 (3.5" HDD)	16 (3.5" HDD)	8 (3.5" HDD)
Internal Storage		500 GB (3.5" HDD)	500 GB (2.5" HDD)	500 GB (3.5" HDD)
Connector	Ethernet	RJ-45, 10 / 100 / 1000 Mbps x 4		
	Video Output	3 displays with outputs VGA, DVI-D (DVI-D signal Only) and HDMI		
	USB 2.0	Front: 2 ports, Rear: 2 ports		
	USB 3.0	Rear: 4 ports		
DVD (±) RW	Slim	8X	8X	
Fan	12 cm (4 3/4")	3 units	-	
	8 cm (3 1/8")	2 units	4 units	
Power		Output: 1000 W Input: 100-240 V, 47-63 Hz	Output: 550 W Input: 100-240 V, 47-63 Hz	Output: 400 W Input: 100-240 V, 47-63 Hz

Physical

LED Indicator			Yes (Fan, Power, HDD)
Color			Black
Dimensions (W x H x D)	4U	20-Bay	483 x 178 x 660.4 mm / 19 x 7 x 26 in
	3U	16-Bay	483 x 132.5 x 650 mm / 19 x 5.2 x 25.5 in
		8-Bay	483 x 132.5 x 580 mm / 19 x 5.2 x 22.8 in
Weight	4U	20-Bay	23.5 kg / 51.8 lb ($\pm$ 1 kg / 2.2 lb)
	3U	16-Bay	18.5 Kg / 40.7 lb (± 1 kg / 2.2 lb)
		8-Bay	17.5 Kg / 38.5 lb (± 1 kg / 2.2 lb)

Software Specifications

Number of hosts	200 units of GV-System and GV-IP Devices; 3 units of GV-Recording Server
Number of user accounts	100 in total including Supervisors and Users
Backup schedule	Yes (for GV-System and GV-IP Devices)
Backup rules	10 rules for working and non-working days independently for GV-System and GV-IP Devices
Resuming backup after losing connection to hosts	Yes
E-mail alert	Low disk space, disconnection, file transfer failure
Disk space recycle	Yes
Keep Day	Definable and unlimited in number
System Log query	Web-based query pages
Video playback	Available through web-based query pages, or Remote ViewLog Playback program

Language

Type	Danish / English / French / German / Hebrew / Hungarian / Italian / Japanese / Polish / Portuguese / Russian / Serbian / Simplified Chinese / Spanish / Traditional Chinese / Turkish

Recommended Network and Hard Disk Requirements

The system's backup speed and transmitting capacity vary depending on the number of Gigabit connections. The numbers of Gigabit network cards required to receive 200 hosts and to support remote access of backed up data are listed below according to the resolution of the source video.

Also note the maximum number of hosts supported by a single hard disk to calculate the number of hard disks required. For example, at least 7 hard disks are required for up to total 200 hosts supported with 1.3 / 3 M resolution.

Resolution	FPS	Codec	Gigabit Network Cards Required		Max. hosts per HDD
			Receiving 200 hosts	**For Playback / Web Query access**	
1.3 MP	30 fps	H.264	Gigabit network card x 2 (up to 100 hosts per card)	Gigabit Network Card x 1	32 hosts
2 MP	30 fps	H.264	Gigabit Network Card x 3 (up to 67 hosts per card)	Gigabit Network Card x 1	21 hosts
3 MP	20 fps	H.264	Gigabit network card x 2 (up to 100 hosts per card)	Gigabit Network Card x 1	32 hosts
4 MP	15 fps	H.264	Gigabit Network Card x 3 (up to 67 hosts per card)	Gigabit Network Card x 1	24 hosts
5 MP	10 fps	H.264	Gigabit Network Card x 3 (up to 67 hosts per card)	Gigabit Network Card x 1	24 hosts

Appendix

A. Supported IP Devices

This list provides the supported IP device brands. For detailed information on the supported IP devices, refer to Supported IP Camera List on GeoVision's Website:

http://www.geovision.com.tw/english/4_21.asp

GeoVision
ACTi
Arecont Vision
AXIS
Bosch
Canon
CNB
D-Link
Etrovision
Hikvision
HUNT
IQinVision
JVC
LG
MOBOTIX
Panasonic
Pelco
Samsung
Sanyo
SONY
UDP
Verint
VIVOTEK

B. Assigning Network Cards

GV-3008H V5, GV-NVRH V5, GV-Hot Swap Recording Server System and GV-Hot Swap Backup Center System come with multiple Ethernet ports. To increase network bandwidth and avoid network bottleneck, you need to set up multiple networks and divide networks into different multiple subnets or segments. Next, organize IP channels received and clients transmitted into different networks.

1. To set up multiple networks, you need to install multiple network cards. Each network card is assigned a different IP address and subnet mask.
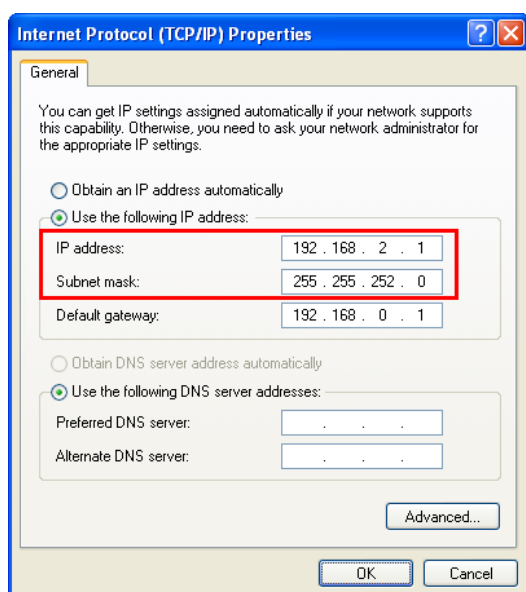
2. Organize IP channels and clients into groups and then assign each group to different network cards using the IP addresses you have set up.

For **GV-3008H V5**, the recommended network allocation is illustrated as below. The first network card can receive up to 16 IP channels in 2 M resolution, and transmit up to 68 channels with 34 channels in 2 M resolution and 34 channels in D1 resolution. The second network card can transmit up to 84 channels with 42 channels in 2 M resolution and 42 channels in D1 resolution.

GV-3008H V5 + 2 Network Cards assigned on different networks
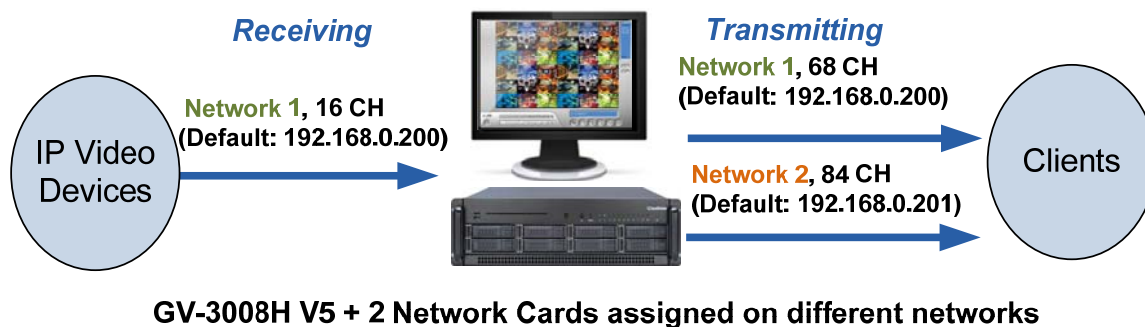
For **GV-NVRH V5**, the recommended network allocation is illustrated as below. The first network card can receive up to 32 IP channels in 2 M resolution, and transmit up to 32 in 2 M resolution. The second network card can transmit up to 64 channels in 2 M resolution.

GV-NVRH V5 + 2 Network Cards assigned on different networks

For **GV-VMSH V5**, the recommended network allocation is illustrated as below. The first network card can receive up to 64 IP channels in 2 M resolution. The second network card can transmit up to 64 channels in 2 M resolution.

GV-VMSH V5 + 2 Network Cards assigned on different networks

For **GV-Hot Swap Recording Server System**, the recommended network allocation is illustrated as below. The first network card can receive up to 128 IP channels in 1 / 3 M resolution. The second and third network cards can each transmit up to 150 channels to remote clients.

**GV-Hot Swap Recording Server System +
3 Network Cards assigned on different networks**

For **GV-Hot Swap Backup Center System**, the recommended network allocation is illustrated as below. The first three network cards can receive up to 200 hosts in

2 / 4 / 5 M resolution. The third network card can receive up to 100 users for Web query or remote playback.

GV-Hot Swap Backup Center System +
4 Network Cards assigned on different networks
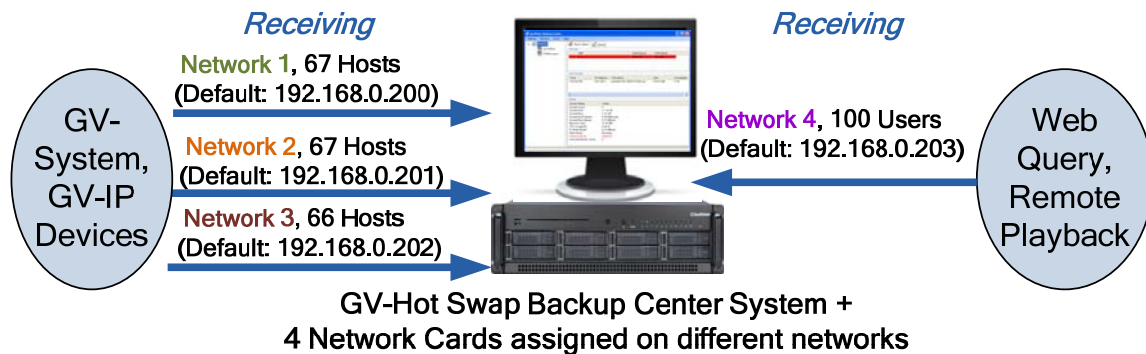
C. Combining Optional Accessories

The combination of options for **GV-Hot Swap Surveillance System** is listed below.

Note: Redundant Power Supply can be combined with other GV-Hot Swap Surveillance System V5 (Rev. B) accessories for all models.

When choosing options, there are two general choices:

1. **Choose one**: You may choose one option if there is a Yes listed under the Graphic Cards and Network Cards columns. For example: the GV-SDI-204H V5 4U (20-bay) and 3U (16-bay) models with 1 built-in video capture card has an option of choosing either Graphic Cards supporting 5 monitors OR Network Cards supporting 2 or 3 gigabit ports.

2. **Combine (X + Y / X + Y + Z)**: You may choose to combine options if there is a single capital letter listed under the Graphic Cards, Network Cards and RAID Card columns. For example: the GV-SDI-204H V5 3U (8-bay) models with 1 built-in video capture card has an option of choosing either one of optional accessories with a Yes listed under the Graphic Cards, Network Cards and RAID Card columns OR A + B / A + C / A + D / B + D / C + D / A + B + D. In this case:

   - A + B means choosing Graphic Cards supporting 5 monitors and Network Cards supporting 2 gigabit ports.

   - A + D means choosing Graphic Cards supporting 5 monitors and the RAID Card.

   - A + B + D means choosing Graphic Cards supporting 5 monitors, Network Cards supporting 2 gigabit ports and the RAID Card.

4U (20-bay) and 3U (16-bay) models

Models	Built-in Video Capture Cards	Options	Graphic Cards Monitors Supported 5	Monitors Supported 7	Network Cards Gigabit Ports Supported 2	3	4	5	RAID Card
GV-SDI-204H V5 GV-5016H V5 GV-900H V5 GV-800H V5	1	Choose one OR combine A + D or B + D or C + D or A + B + D	Yes (A)	No	Yes (B)	Yes (C)	No	No	Yes (D)
	2	-	No	No	No	No	No	No	Yes
GV-1480H V5 GV-1240H V5 GV-1120H V5	1	Choose one OR combine A + D or B + D or C + D	Yes (A)	No	Yes (B)	Yes (C)	No	No	Yes (D)
	2	-	No	No	No	No	No	No	No
GV-NVRH V5 / GV-VMSH V5	-	Choose one OR combine A + E or B + E or C + E or D + E or A + B + E	Yes (A)	No	Default	Yes (B)	Yes (C)	Yes (D)	Yes (E)

4U (20-bay) and 3U (16-bay) models

Models	Built-in Video Capture Cards	Options	Graphic Cards		Network Cards					RAID Card
			Monitors Supported		Gigabit Ports Supported					
			5	7	2	3	4	5	
GV-Hot Swap Backup Center System	-	Choose one OR combine A + B	No	No	Default	Default	Default	Yes (A)	Yes (B)
GV-Hot Swap Recording Server	-	Choose one OR combine A + C or B + C	No	No	Default	Default	Yes (A)	Yes (B)	Yes (C)

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3U (8-bay) models

Models	Built-in Video Capture Cards	Options	Graphic Cards Monitors Supported		Network Cards Gigabit Ports Supported				RAID Card
			5	7	2	3	4	5	
GV-SDI-204H V5	1	Choose one OR combine A + B or A + C or A + D or B + D or C + D or A + B + D	Yes (A)	Yes	Yes (B)	Yes (C)	Yes	Yes	Yes (D)
	2	Choose one OR combine A + D or B + D or C + D	Yes (A)	No	Yes (B)	Yes (C)	No		Yes (D)
	3	-	No	No	No		No		Yes
GV-1480H / 1240H / 1120H V5	1	Choose one OR combine A + B or B + C	Yes (A)	No	Yes (B)	Yes	Yes	No	Yes (C)
	2	-	No	No	Yes	No	No		No

3U (8-bay) models

Models	Built-in Video Capture Cards	Options	Graphic Cards		Network Cards				RAID Card
			Monitors Supported		Gigabit Ports Supported				
			5	7	2	3	4	5	
GV-5016H V5 / GV-900H V5 / GV-800H V5	1	Choose one OR combine A + B or A + C or A + D or B + D or C + D or A + B + D	Yes (A)	Yes	Yes (B)	Yes (C)	Yes	Yes	Yes (D)
	2	Choose one OR combine A + C or B + C	Yes (A)	No	Yes (B)	Yes	No	No	Yes (C)
GV-NVRH V5	-	Choose one OR combine A + B or A + C or B + E or C + E or D + E	Yes (A)	Yes	Default	Yes (B)	Yes (C)	Yes (D)	Yes (E)

3U (8-bay) models

Models	Built-in Video Capture Cards	Options	Graphic Cards Monitors Supported		Network Cards Gigabit Ports Supported				RAID Card
			5	7	2	3	4	5	
GV-Hot Swap Backup Center System	-	Choose one OR combine A + B	Yes	No	Default	Default	Default	Yes (A)	Yes (B)
GV-Hot Swap Recording Server System	-	Choose one OR combine A + B or B + C	Yes	No	Default	Default	Yes (A)	Yes (B)	Yes (C)

Note:

1. GV-3008H V5 does not support optional graphic cards, network cards and RAID Card.

2. The following models do not support optional RAID Card:

   A. 3U (8-bay) models with 2 built-in GV-1480 / 1240 / 1120 Cards

   B. 3U (16-bay) and 4U (20-bay) models with 2 built-in GV-1480 / 1240 / 1120 Cards

3. For the GV-NVRH V5 / GV-Hot Swap Backup Center System / GV-Hot Swap Recording Server System 4U (20-bay) and 3U (16-bay) models to support 5 gigabit ports requires replacing the original single network card with 2 dual network cards due to limited space of the expansion slots.

Warranty Requirements

To validate your purchase, you shall complete the online Product Registration **within 30 days from the date of purchase** at http://www.geovision.com.tw/english/4_6.asp. Or click **GeoVision Online Registration** in My Favorite for a direct link.

If you fail to complete the Product Registration, the warranty period will start **from the date of shipment.**

Before you return the product

Some problems you experience may be related to software or the operating system. It is important to investigate other sources of assistance first. Before returning the product, try the following:

1. Review troubleshooting sections in the documentation for software and peripheral devices.

2. Try rebuilding the operating system and GV-System. Refer to *3.14.1 Restoring the System.*

3. Consult your dealer. They are your best sources for current information and support. Or you can call or email GeoVision offshore offices for assistance.

   When you call or e-mail, please inform us the following:

   - Model name
   - Bar Code
   - Software system version
   - Details of the defect or problem
   - Attempted solutions
   - Your contact information
   - Reseller's contact information

4. If you find it is the software problem, please check our website or your dealer for software updates.

Obtaining Warranty Service

If you are still unable to solve the problem and suspect that it is hardware related, follow
these:

1. Send an e-mail to GeoVision to start Return Merchandise Authorization (RMA) process.

    E-Mail: sales@geovision.com.tw or dvrsystem@geovision.com.tw

2. Securely pack the product in its original carton using the original packing material, or in
   equivalent packaging.

3. The product shall be returned to **GeoVision, Taiwan** at your expense for shipping and
   insurance costs.

**BEFORE YOU DELIVER YOUR GV-HOT SWAP DVR/NVR SYSTEM V5, GV-HOT SWAP
RECORDING SERVER SYSTEM AND GV-HOT SWAP BACKUP CENTER SYSTEM FOR
WARRANTY SERVICE, IT IS YOUR RESPONSIBILITY TO BACK UP YOUR DATA. YOU
WILL BE RESPONSIBLE FOR REINSTALLING ALL DATA, SETTINGS AND PASSWORDS.
DATA RECOVERY IS NOT INCLUDED IN THE WARRANTY SERVICE AND GEOVISION IS
NOT RESPONSIBLE FOR DATA THAT MAY BE LOST OR DAMAGED DURING TRANSIT
OR A REPAIR.**

Warranty Form

Thank you for purchasing the GV-Hot Swap Surveillance System V5. To help us validate your purchase and better serve you in the future, please go to
http://www.geovision.com.tw/english/4_6.asp or click **GeoVision Online Registration** in My Favorite for a direct link to register online **within 30 days from the date of purchase**. Please keep this copy for your records.

Name: First (given)	**Surname (family name)**
Company Name (only if the product is owned by company):	
Mailing Address:	
City/Town:	**Province/State:**
Country:	**Postal Code:**
Telephone: (O)	**(H)**
Fax:	
E-Mail:	
Date of Purchase: (e.g. 16-APR-2012)	

Product: Please check the model and its items you purchased.

Model

☐ **GV – 800H V5**   ☐ **GV – 900H V5**   ☐ **GV – 1120H V5**

☐ **GV – 1240H V5**   ☐ **GV – 1480H V5**   ☐ **GV – 3008H V5**

☐ **GV – 5016H V5**   ☐ **GV – NVRH V5**   ☐ **GV – SDI –204H V5**

☐ **GV – VMSH V5**

☐ **Integrated**   ☐ **GV – Hot Swap Recording Server System**

                        ☐ **GV – Hot Swap Backup Center System**

NVR with third-party IP devices

☐ **1 Channels**   ☐ **2 Channels**   ☐ **4 Channels**   ☐ **6 Channels**

☐ **8 Channels**   ☐ **10 Channels**   ☐ **12 Channels**   ☐ **14 Channels**

☐ **16 Channels**   ☐ **18 Channels**   ☐ **20 Channels**   ☐ **22 Channels**

☐ **24 Channels**   ☐ **26 Channels**   ☐ **28 Channels**   ☐ **30 Channels**

☐ **32 Channels**

Warranty Form

Bay Option
4U ☐ **20 Bays**
3U ☐ **16 Bays** ☐ **8 Bays**

Bar Code:

Shipment Date:

GeoVision, Inc.

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