Chapter 2

Hardware Accessories

This chapter includes the following information:

- **System requirements**
- **Packing list**
- **Connection diagrams**
- **Specifications**
- **Driver installation**

2.1 GV-Hybrid DVR Card

The GV-Hybrid DVR Card supports hardware-based compression, giving you less CPU usage and higher system performance. It features:

- DVD recording quality.

- Support for exporting DVD format files.

The Characteristics of GV-Hybrid DVR Card

- You can connect up to four GV-Hybrid DVR Cards to one GV-System; one GV-Hybrid DVR Card supports up to four channels.

- The GV-Hybrid DVR Card only affects video recording; all live views are still provided by the GV-Video Capture Card.

- For audio recording, the audio inputs of the GV-Video Capture Card always have the sequence priority over those of GV-Hybrid DVR Card. For example, GV-800 Card has 4 audio channels, so that the GV-Hybrid DVR Card's audio channels will be from 5 to upwards.

- The GV-Hybrid DVR Card supported-channels do not work with these features: Water Mark, Text Overlay and Pre-Rec Motion.

For further operations on GV-System, see *Configuring Hybrid Cameras*, Chapter 1, *User's Manual* on the Surveillance System Software CD.

System Requirements

- GV-600, 650, 750, 800, 1000, 1120, 1240 and 1480 Cards
- Version 7.0 or later

Packing List

❶ GV-Hybrid DVR Card x 1   ❹ 2-Pin to 5-Pin Audio Cable x 1
❷ Hardware Watchdog Jumper Wire x 1   ❺ 40-Pin Ribbon Cable x 1
❸ 5-Pin to 5-Pin Audio Cable x 1   ❻ Installation Guide x 1

Connections

Connect the GV-Hybrid DVR Card to the GV-Video Capture Card as illustrated below.

Note: Make sure the Ribbon Cables are connected to the correct input and output on the GV-Hybrid DVR Card.
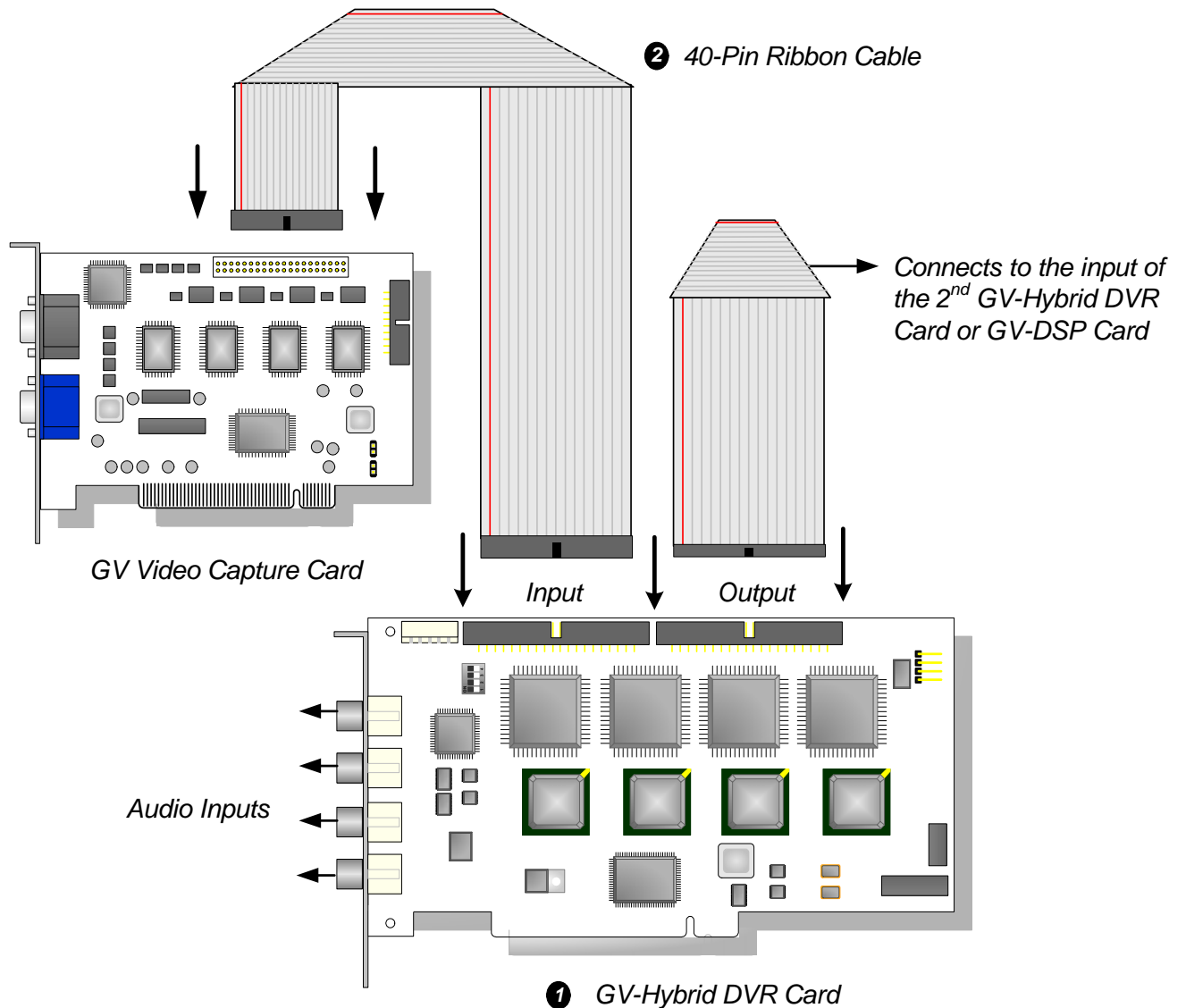

Figure 2-1   GV-Hybrid DVR Card connections

Installing Drivers

After you install the GV-Hybrid DVR Card to the computer, the Hardware Wizard will automatically detect the device. Ignore the wizard, and follow the steps in *1.5 Installing Drivers, Chapter 1* to install drivers.

To verify the drivers are installed correctly, go to Device Manager. In the DVR-Devices field, you should see 4 entries for **GVMP2** and 11 entries for **GVMP2 Null**, as shown below.
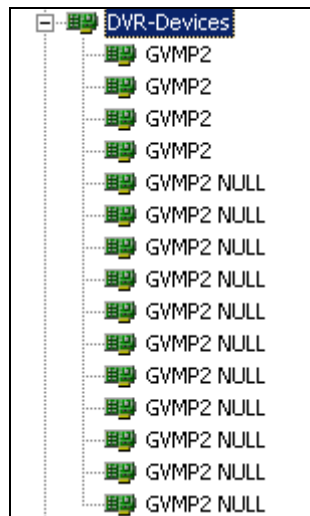

Figure 2-2   Verifying GV-Hybrid DVR Card's drivers

Specifications

Interface	40-Pin Connector
Audio Input	RCA Connector x 4
Number of Channels	4
Recording Rate	120 fps (NTSC), 100 fps (PAL)
Video Resolution	NTSC: 720 x 480
	PAL: 720 x 576
Dimensions	180 mm x 102 mm

2.2 GV-Loop Through Card

The GV-Loop Through Card is designed to take the video signal directly from the GV-Video Capture Card, without internal device processes, and then split it into 16 signals while maintaining video quality. With the duplicate 16 signals, the card can meet your need for multiple monitors.

Packing List

❶ GV-Loop Through Card x 1   ❹ 40-Pin Ribbon Cable x 1

❷ 1-8 D-Type Video Cable x 1   ❺ Installation Guide x 1

❸ 9-16 D-Type Video Cable x 1

Overview

No. 1: Video OUT
No. 2: Video OUT
No. 3: Video IN/OUT (IN for GV Video Capture Card, OUT for DSP Card or Hybrid DVR Card.)
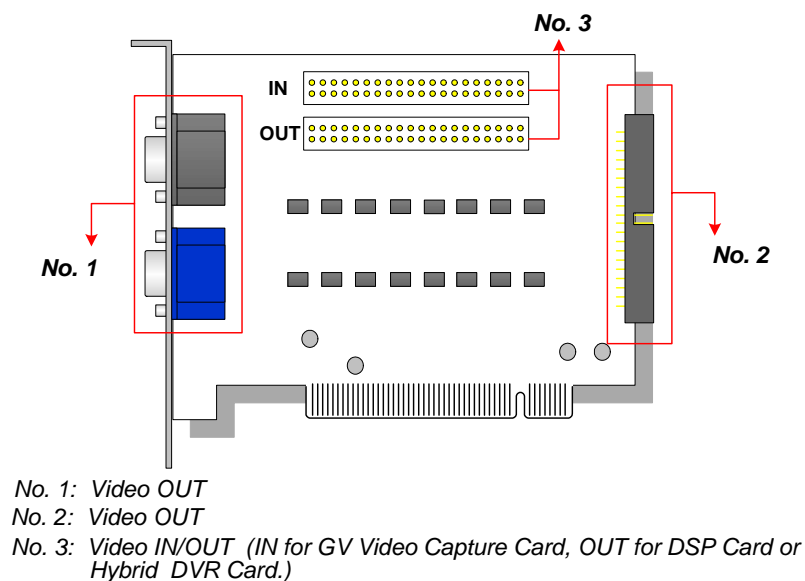
Figure 2-3   GV-Loop Through Card

Note:

1. For No. 2 Video Out, an extra D-Type extension card is required.

2. Select either No. 1 or No. 2 for video out. Using both at the same time may cause video degradation.

3. Only connect GV-series cards, such as Video Capture Card, DSP Card or Hybrid DVR Card to No. 3. Other devices are prohibited.

Connections

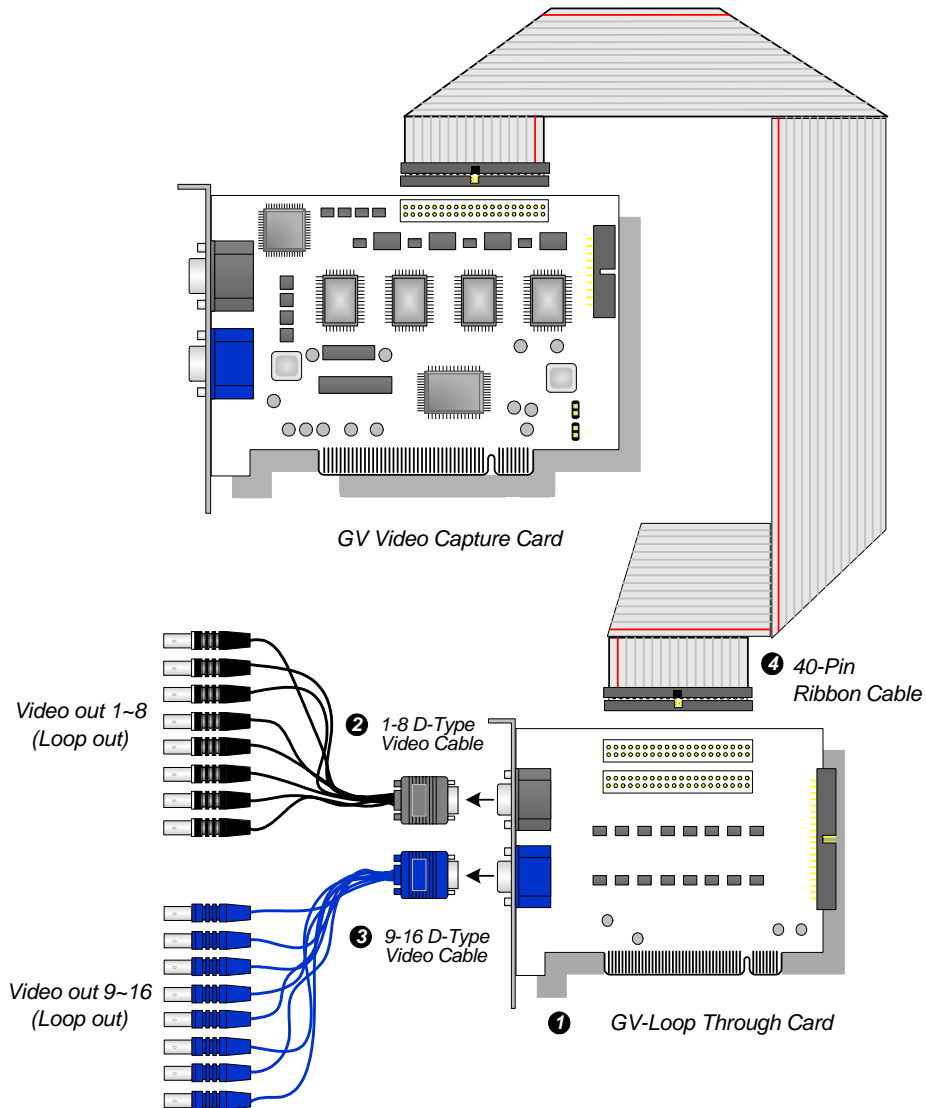Connect D-type cables and the GV-Video Capture Card to the GV-Loop Through Card as illustrated below.

GV Video Capture Card

Video out 1~8
(Loop out)

❷ 1-8 D-Type
Video Cable

❹ 40-Pin
Ribbon Cable

❸ 9-16 D-Type
Video Cable

Video out 9~16
(Loop out)

❶ GV-Loop Through Card

Figure 2-4   GV-Loop Through Card connections

Specifications

Interface for GV-Video Capture Card	40-Pin Connector x 2
Output Interface	DB15 Connector x 2
	40-Pin Connector x 1
Input Signal	16 Channels
Dimensions	130 mm x 98 mm

2.3   GV-DSP Card

The GV-DSP Card, a real-time display card, enables the live display up to 480 fps. In addition, the card supports a TV output, allowing for the simultaneous display on computer and a TV monitor (spot monitor).

For further operations in GV-System, see *DSP Spot Monitor Controller*, Chapter 1, *User's Manual* on the Surveillance System Software CD.

System Requirements

- At least a GeForce 2 MX200 VGA card

Note: The GV-DSP Card is not compatible with VIA-series chipset motherboards.

Packing List

❶ GV-DSP Card x 1
❷ 40-Pin Ribbon Cable x 1
❸ Installation Guide x 1

![GeoVision logo]

Connections

Use the supplied Ribbon Cable to connect the GV-DSP Card to the GV-Video Capture Card as illustrated below.
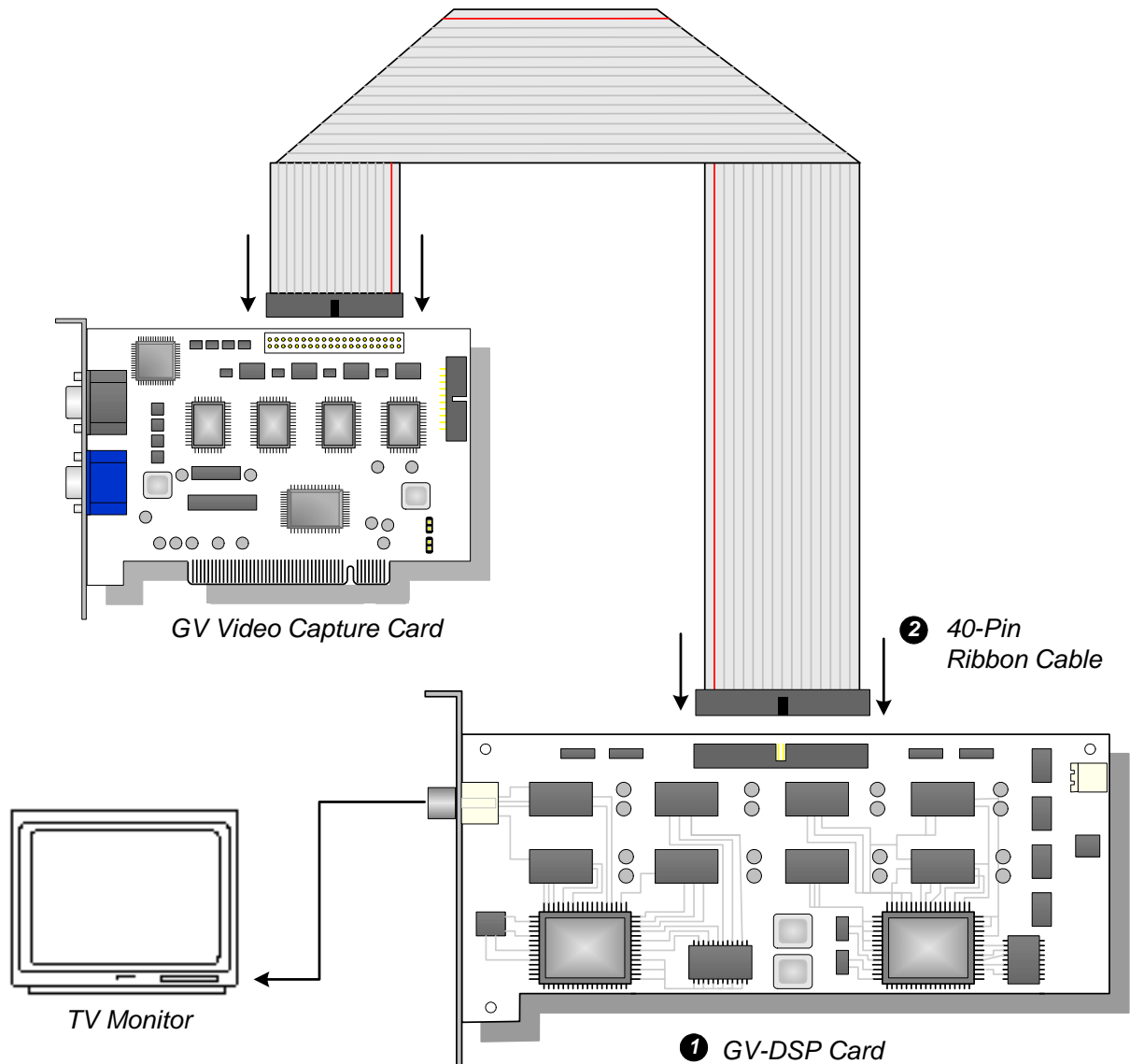

Figure 2-5   GV-DSP Card connections

Installing Drivers

After you install the GV-DSP Card to the computer, the Hardware Wizard will automatically detect the device. Ignore the wizard, and follow the steps in *1.5 Installing Drivers* to install drivers.

To verify the drivers are installed correctly, go to Device Manager. Expanding the Sound, video and game controllers field, you can see:
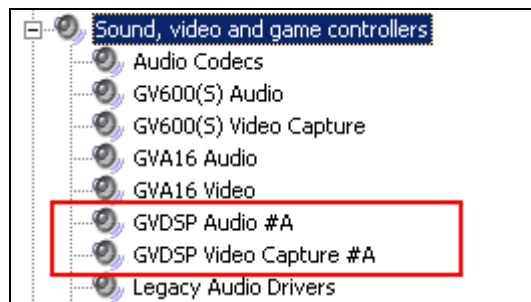

Figure 2-6   Verifying GV-DSP 16-port Card drivers

Model	Entry
8-port	GVDSP8P Audio, GVDSP8P Video Capture
16-port	GVDSP Audio #A, GVDSP Video Capture #A

Specifications

Interface	40-Pin Connector	
TV Output	RCA Connector x 1	
Number of Channels	8, 16	
Display Rate	GV-DSP-8	240 fps
	GV-DSP-16	480 fps
Video Resolution	NTSC	640 x 480
	PAL	720 x 576
Compatible Model	GV-250, GV-600, GV-650, GV-800, GV-900, GV-1000	
Dimensions	GV-DSP-8	191 mm x 98 mm
	GV-DSP-16	204 mm x 100 mm

2.4 GV-A16 Card

The GV-A16 Card can work with the GV-Video Capture Card to record audio for 16 channels, and to provide full duplex audio communication between local and remote users.

Packing List

❶ GV-A16 Card x 1   ❸ 9-16 D-Type Audio Cable x 1
❷ 1-8 D-Type Audio Cable x 1   ❹ Installation Guide x 1

Connections

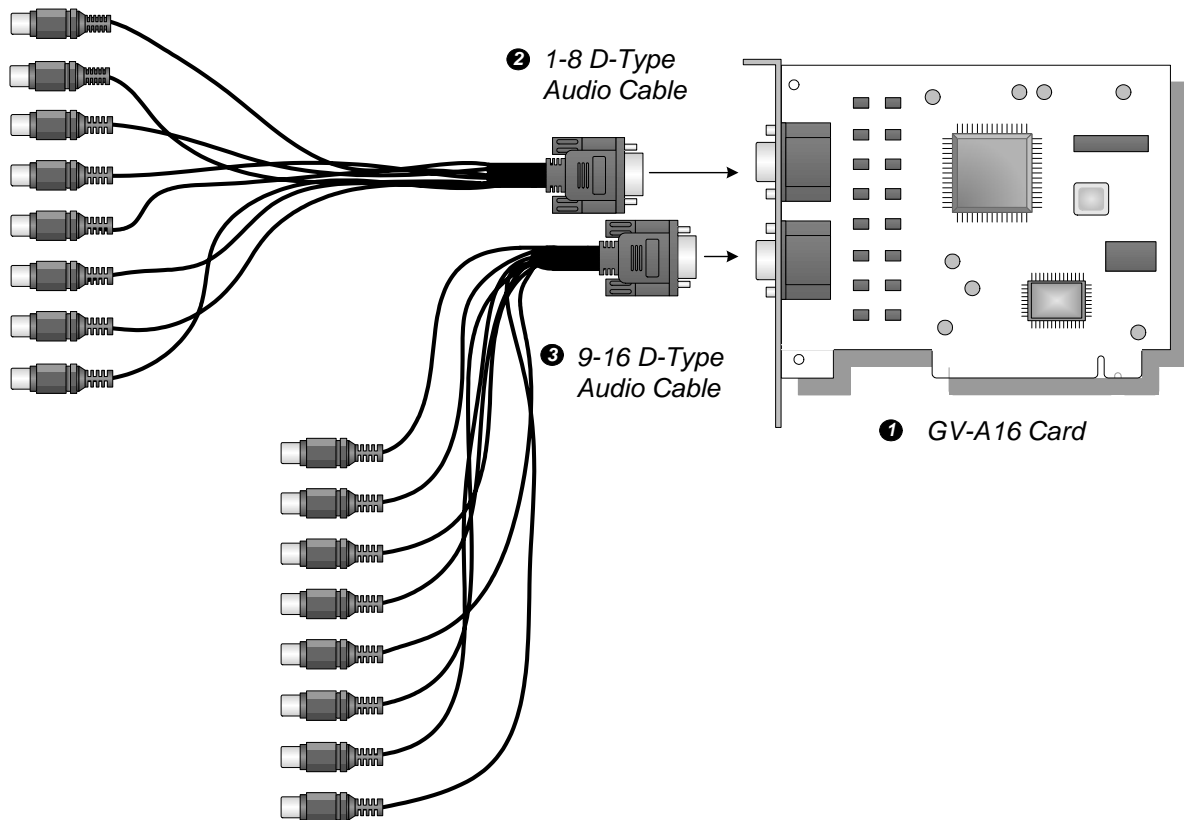Connect the audio cables to the GV-A16 Card as illustrated below.

Figure 2-7   GV-A16 Card Connections

Installing Drivers

After you install the GV-A16 Card to the computer, the Hardware Wizard will automatically detect the device. Ignore the wizard, and follow the steps in *1.5 Installing Drivers, Chapter 1* to install drivers.

To verify the drivers are installed correctly, go to Device Manager. Expanding the Sound, video and game controllers field, you should see the entries for **GVA16 Audio** and **GVA16 Video**.
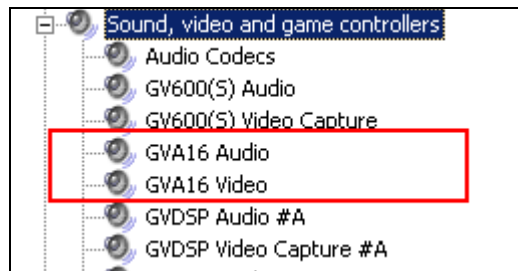

Figure 2-8   Verifying GV-A16 Card drivers

Specifications

Interface	DB9 Connector x 2
Number of Channels	16
Audio Compression	ADPCM 8 bit Mono
Compatible Model	GV-600, GV-650, GV-800, GV-900, GV-1000
Dimensions	120 mm x 91 mm

2.5   GV-NET Card

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

Packing List

❶ GV-NET Card x 1
❷ RJ-11 to DB9 Cable x 1

❸ 4-Pin to 4-Pin Mini Power Cable x 1
❹ Installation Guide x 1

Connections

Use the RJ-11 to DB9 Cable to connect the Card to the PC's COM port. Use the 4-Pin Mini Power Cable to connect the Card to the PC's power supply.

Note: The GV-NET Card only provides RS-485 / RS-232 data conversion; the connection to the GV-Video Capture Card is not required.
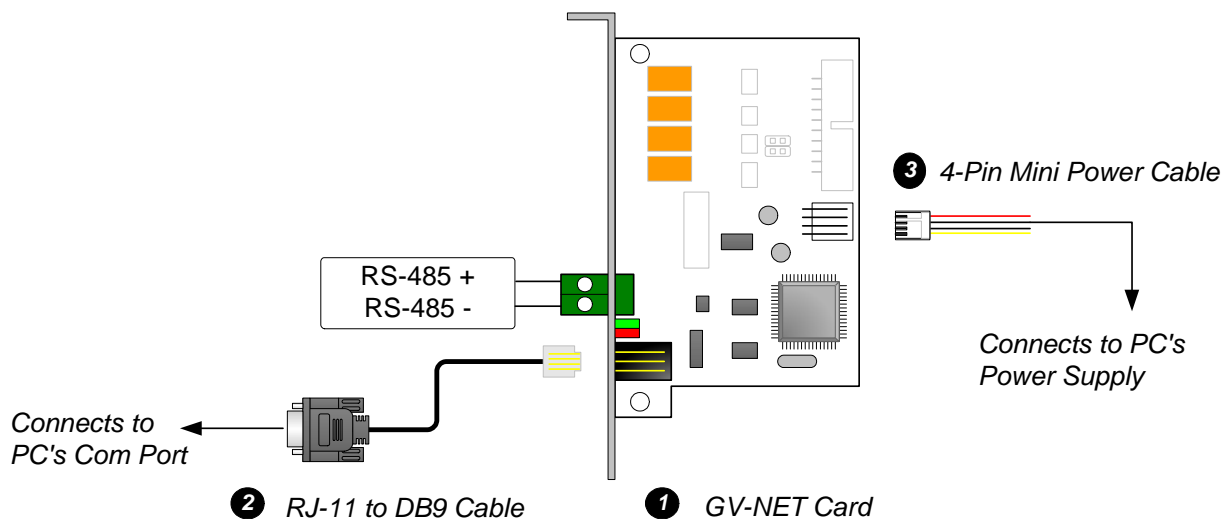

Figure 2-9   GV-Net Card Connections

RS-485 Device Connections

Following provides three examples of connecting RS-485 devices to your computer through the GV-NET Card.

Connecting PTZ Domes
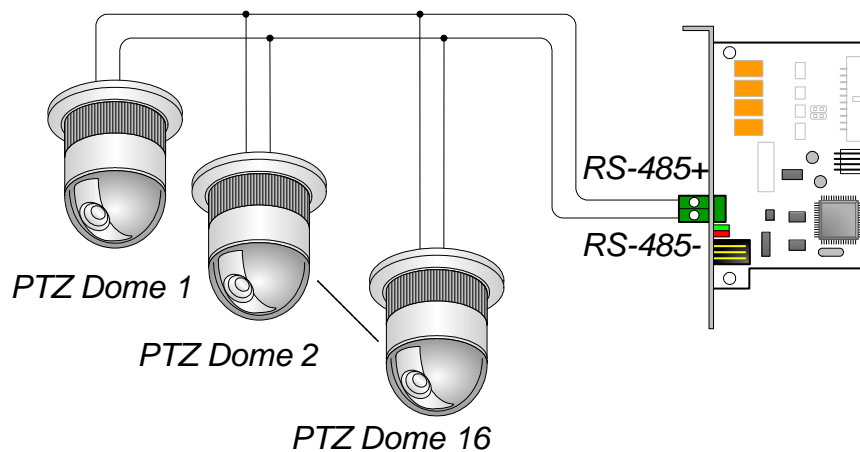
The GV-NET Card can connect up to 16 PTZ domes.

RS-485+

RS-485-

PTZ Dome 1

PTZ Dome 2

PTZ Dome 16

Figure 2-10   Connecting PTZ domes

Connecting the POS System

Use the GV-NET Card and the RS-485 cable to extend the communication distance from the GV-Data Capture Box to the GV-System.
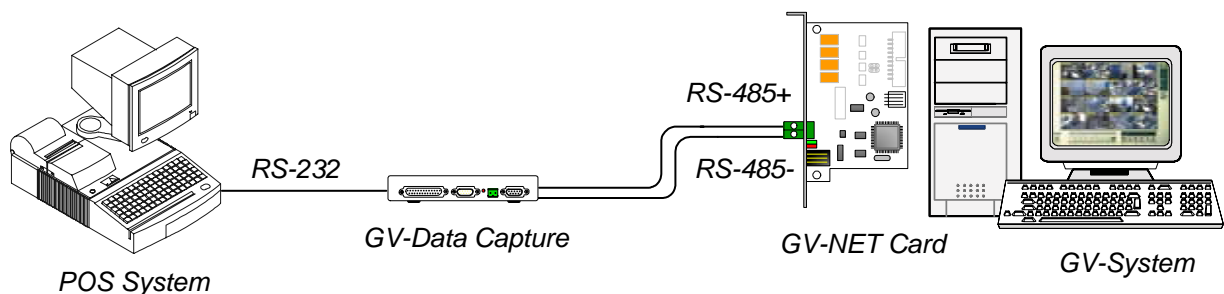
RS-485+

RS-485-

RS-232

GV-Data Capture

GV-NET Card

GV-System

POS System

Figure 2-11   Connecting the POS System

Connecting the GV-IO and GV-Relay Module

The GV-NET Card can connect up to nine GV-IO and GV-Relay modules.
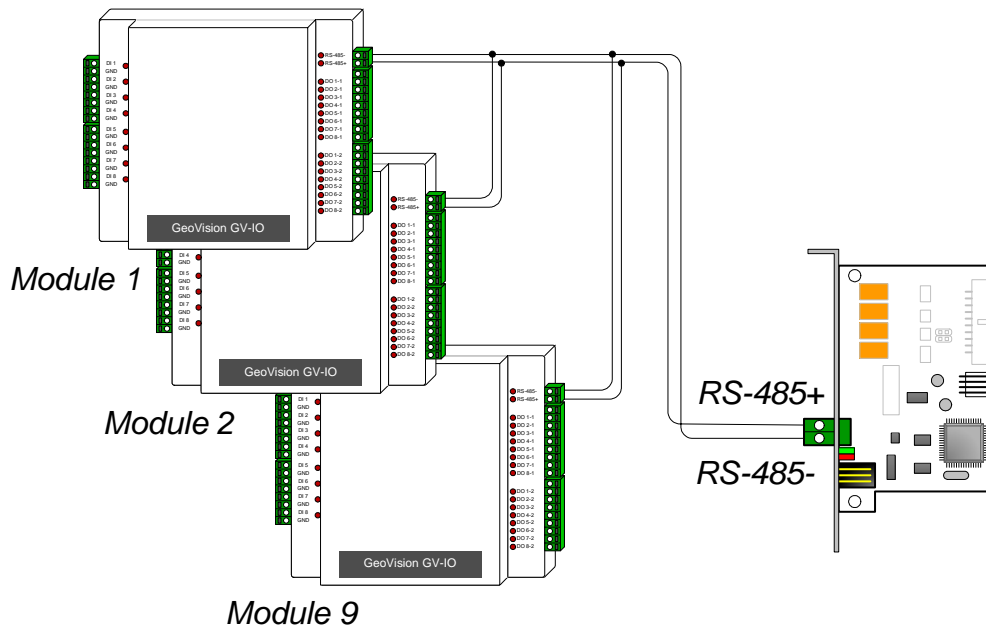For details on the GV-IO and GV-Relay module, see *2.10 GV-IO and GV-Relay Module.*

Figure 2-12   Connecting GV-IO boxes

Specifications

RS-232 to PC	RJ-11 to DB9 Cable
RS-485 Interface	Two Wires
Communication	RS-485, 1,200-19,200 bps
DC IN	DC 5V, 1A
Environmental Condition	0 to 50 Degree C, 5%-95% (Non-Condensing)
Compatible Model	All GV-Video Capture Card Models
Dimensions	63 mm x 90 mm

2.6   GV-NET/IO Card

The GV-NET/IO Card not only is a RS-485 / RS-232 interface converter, but also supports four digital inputs and four relay outputs, meeting your need for external alarms and sensors.

Packing List

❶ GV-NET/IO Card x 1

❷ RJ-11 to DB9 Cable x 1

❸ 4-Pin to 4-Pin Mini Power Cable x 1

❹ 20-Pin Ribbon Cable x 1

❺ Installation Guide x 1

Connections

- Use the Ribbon Cable to connect the GV-NET/IO Card to the GV-Video Capture Card.

- Use the RJ-11 to DB9 Cable to connect the GV-NET/IO Card to the PC's COM port.

- Use the 4-Pin Mini Power Cable to connect the GV-NET/IO Card to the PC's power supply.
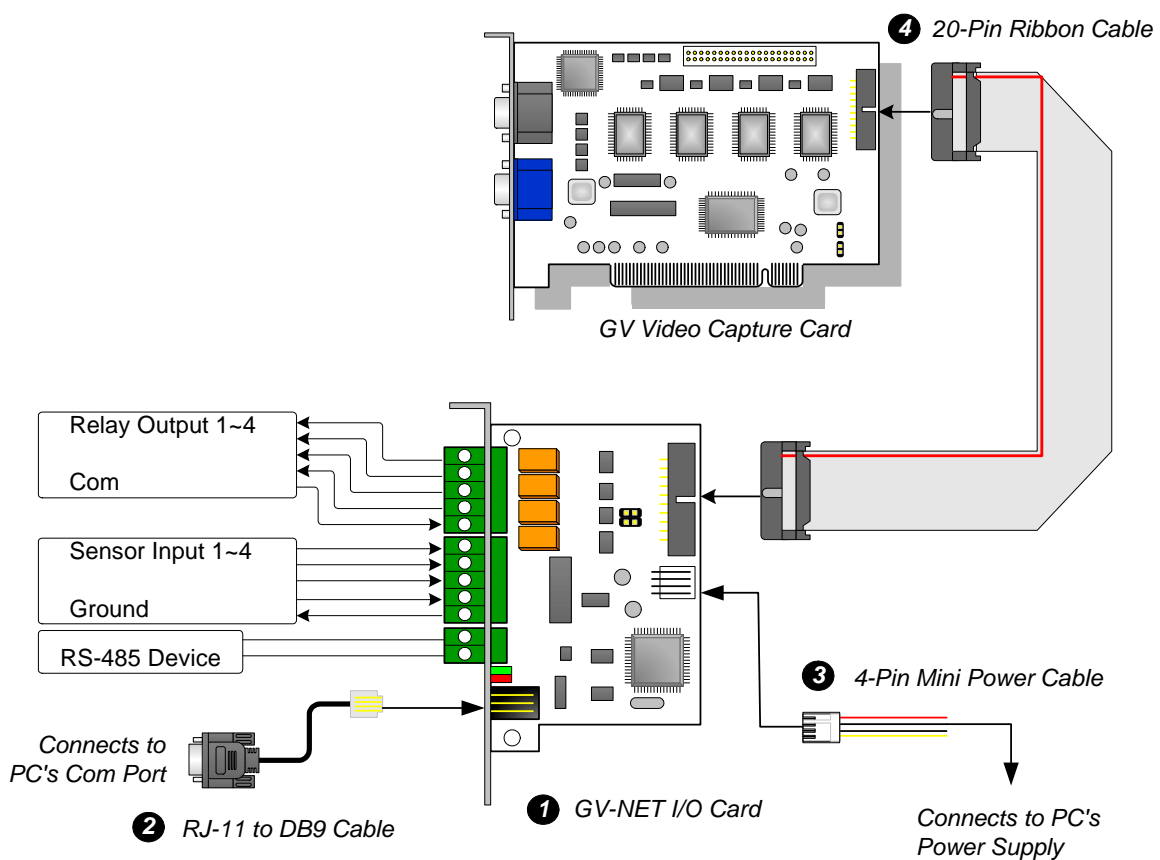

Figure 2-13   GV-NET/IO Card connections

Note:

1. Use the switch for Dry Contact and 5V Wet Contact.
2. The GV-NET/IO Card accepts either all dry-contact or all wet-contact devices. Don't mix two type devices in the same card.
3. To prevent noise interference in I/O operation, tightly screw the GV-NET/IO Card to the computer case.

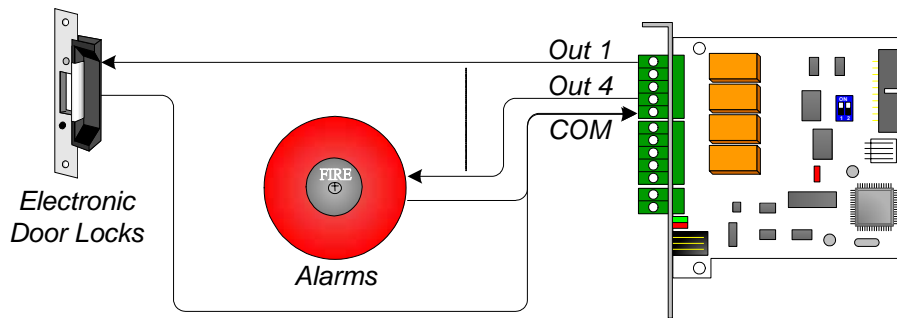---

Connecting Output Devices

Figure 2-14   Connecting output devices

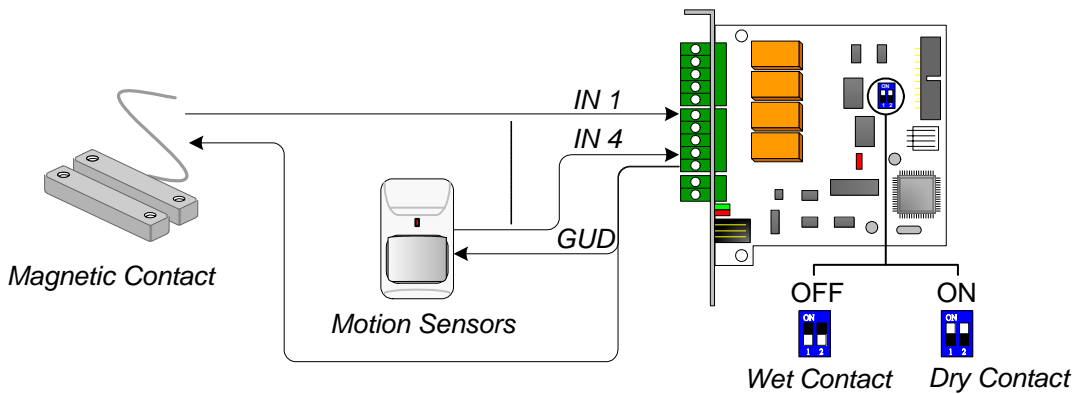## Connecting Input Devices

Figure 2-15   Connecting input devices

Connecting RS-485 Devices

The connections of RS-485 devices to the GV-NET/IO Card are the same as the GV-NET Card. Refer to the diagrams in *2.5 GV-NET Card, RS-485 Device Connections.*

Specifications

Input	Input	4
	Input Signal	5V DC (Floating) / TTL
	High State	5V
	Low State	0V
Output	Relay Output	4
	Relay Status	Normal Open
	Relay Capacitance	2A / 30V DC; 0.25A / 250V AC
	Relay On/Off Time	4ms / 4ms
RS-232 Interface	RJ-11 to DB9 Cable	
Communication	RS-485, 1,200-19,200 bps	
DC IN	DC 5V, 1A	
Environmental Condition	0-50 Degree C, 5%-95% (Non-Condensing)	
Compatible Model	GV-600 V3, GV-650 V3, GV-800 V3, GV-900 V1.11, GV-1000 V1.21, GV-1120, GV-1240, GV-1480	
Dimensions	88 mm x 99 mm	

2.7 GV-IO 12-In Card

The GV-IO 12-In Card is designed to work with the GV-NET/IO Card. With 12 digital inputs, the GV-IO 12-In Card can expand the GV-System's capacity up to 16 digital inputs.

System Requirements

- GV-NET/IO Card

Packing List

❶ GV-IO 12-In Card x 1

❷ 20-Pin Ribbon Cable with 4 connectors x 1

❸ Installation Guide x 1

Connections

Use the four-connector Ribbon Cable to connect the GV-IO 12-In Card, GV-Video Capture Card, GV-NET/IO Card and GV-IO 12-Out Card together, as illustrated below.
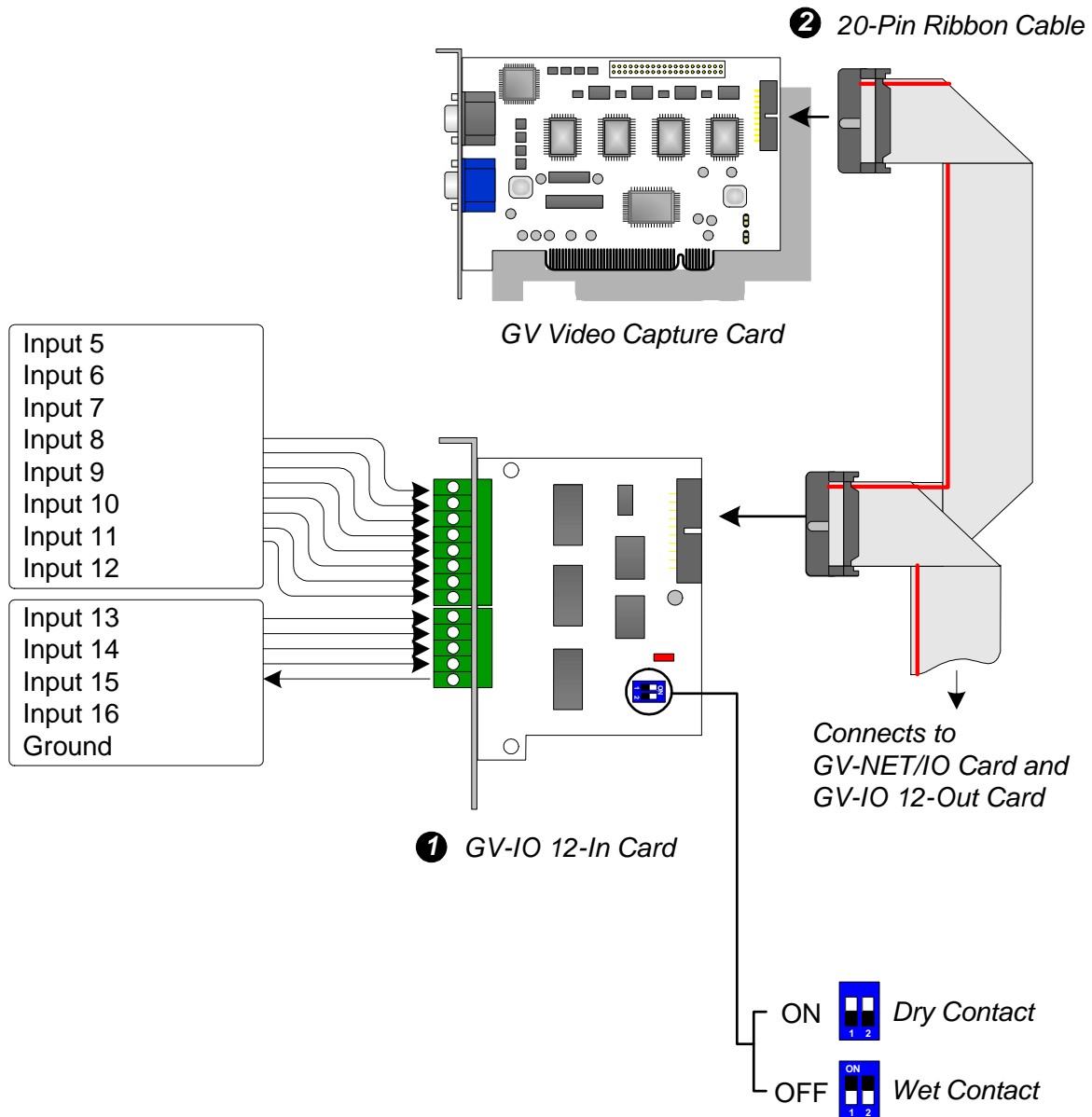

Figure 2-16   GV-IO 12-In Card connections

Note:

1. Use the switch for Dry Contact and 5V Wet Contact.
2. The GV-IO 12-In Card accepts either all dry-contact or all wet-contact devices. Don't mix two type devices in the same card. (Default: Dry Contact)
3. To prevent noise interference in I/O operation, tightly screw the GV-IO 12-In Card to the computer case.
4. The GV-IO 12-In Card must work together with the GV-NET/IO Card.

Specifications

Input	Input	12
	Input Signal	5V DC (Floating) / TTL
	High State	5V
	Low State	0V
Environmental Condition	0-50 Degree C, 5%-95% (Non-Condensing)	
Compatible Model	GV-600 V3, GV-650 V3, GV-800 V3, GV-900 V1.11, GV-1000 V1.21, GV-1120, GV-1240, GV-1480	
Dimensions	64 mm x 99 mm	

2.8 GV-IO 12-Out Card

The GV-IO 12-Out Card is designed to work with the GV-NET/IO Card. With 12 replay outputs, the GV-IO 12-Out Card can expand the GV-System's capacity up to 16 relay outputs.

System Requirements

- GV-NET/IO Card

Packing List

❶ GV-IO 12-Out Card x 1

❷ 20-Pin Ribbon Cable with 4 connectors x 1

❸ 4-Pin to 4-Pin Mini Power Cable x 1

❹ Installation Guide x 1

Connections

Use the four-connector Ribbon Cable to connect the GV-IO 12-Out Card, GV-Video Capture Card, GV-NET/IO Card and GV-IO 12-Out Card together, as illustrated below.
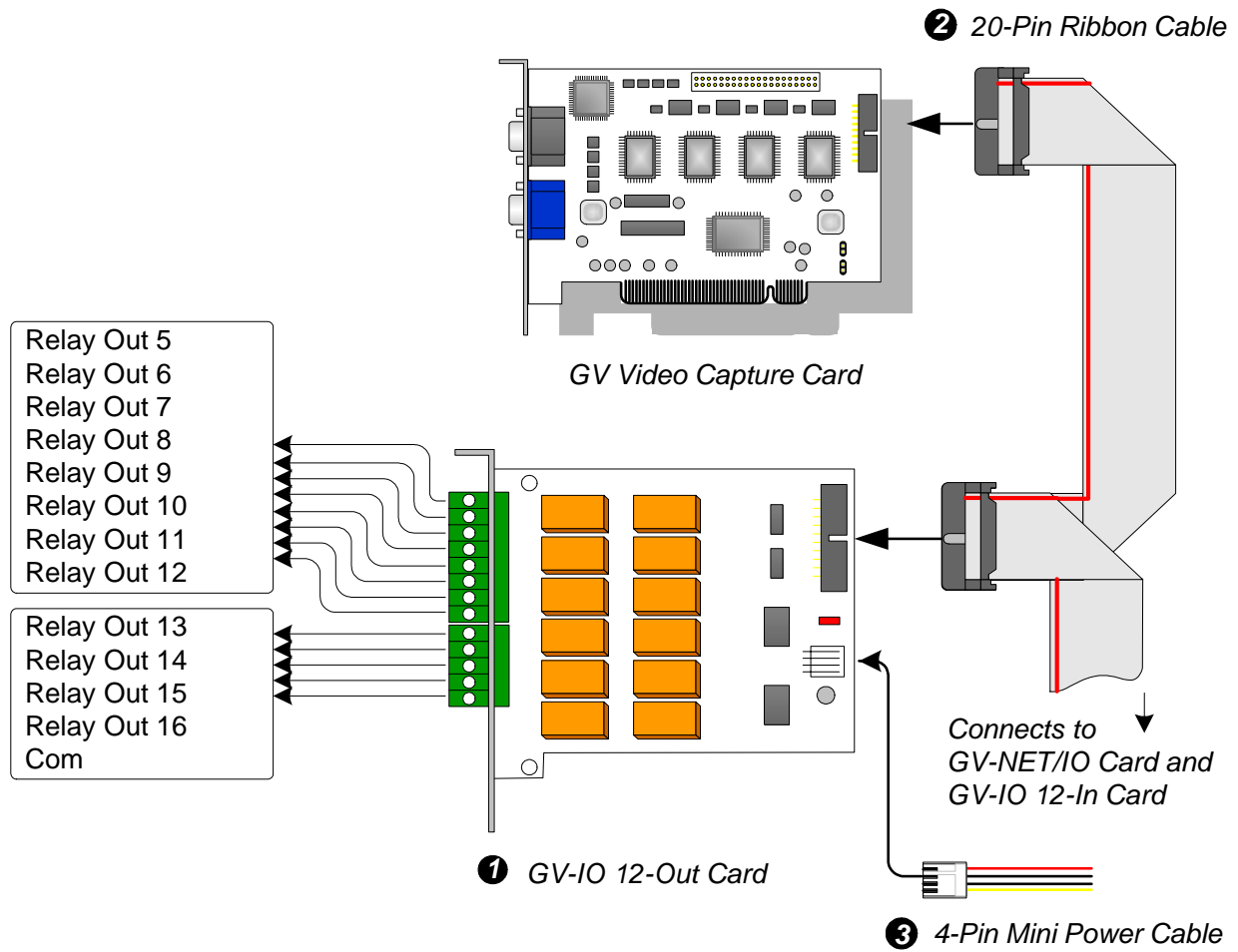

Figure 2-17   GV-IO 12-Out Card connections

Note:

1. To prevent noise interference in I/O operation, tightly screw the GV-IO 12-Out Card to the computer case.
2. The GV-IO 12-Out Card must work together with the GV-NET/IO Card.

Specifications

Output	Relay Output	12
	Relay Status	Normal Open
	Relay Capacitance	2A / 30V DC; 0.25A / 250V AC
	Relay On/Off Time	4ms / 4ms
DC IN	DC 5V, 1A	
Environmental Condition	0~50 Degree C, 5%~95% (Non-Condensing)	
Compatible Model	GV-600 V3, GV-650 V3, GV-800 V3, GV-900 V1.11, GV-1000 V1.21, GV-1120, GV-1240, GV-1480	
Dimensions	107 mm x 99 mm	

2.9 GV-NET Box

The GV-Net Box is a RS-485 / RS-232 interface converter, the same function as the GV-Net Card. The differences are that the GV-NET Card is fixed within the computer and receives the power supply from your computer, while the GV-NET Box is an independent box and has its own power supply adaptor.

Packing List

❶ GV-NET Box x 1   ❸ Power Adapter DC 5V x 1
❷ DB9 RS-232 Cable (1.8 meters) x 1 ❹ Installation Guide x 1

Connections

- Use the supplied RS-232 cable to connect the GV-NET Box to the computer.

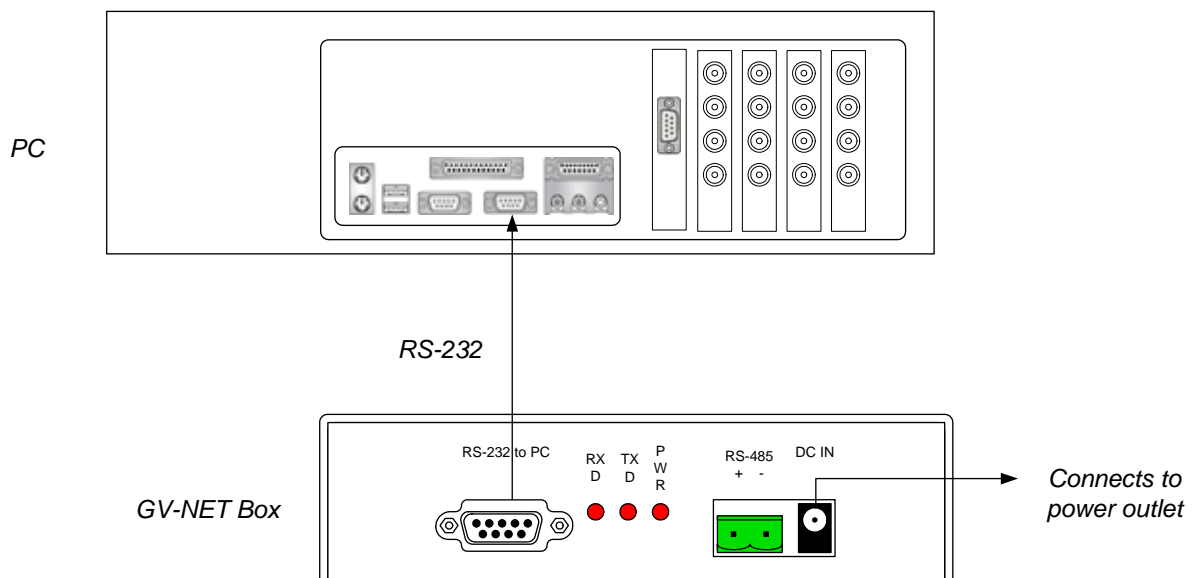- Use the power adaptor to connect the GV-NET Box to the power outlet.

Figure 2-18   GV-Net Box connections

RS-485 Device Connections

The connections of RS-485 devices to the GV-NET Box are the same as the GV-NET Card. Refer to the diagrams in *2.5 GV-NET Card, RS-485 Device Connections.*

Specifications

RS-232 to PC	DB9 Male to DB9 Female Cable
RS-485 Interface	Two Wires
Communication	RS-485, 1,200-19,200 bps
DC IN	Power Adapter DC 5V, IA Inner Positive
Environmental Condition	0 to 50 Degree C, 5%-95% (Non-Condensing)
Compatible Model	All GV-Video Capture Card Models
Dimensions	103 (W) x 32 (H) x 64 (D) mm

2.10 GV-IO and GV-Relay Module

The GV-IO and GV-Relay module includes one GV-IO Box and two GV-Relay Boxes, providing eight digital inputs and 16 relay outputs.

The GV-IO and GV-Relay modules connect to the GV-System through the RS-232 / RS-485 interface converter, including GV-NET Card, GV-NET/IO Card and GV-NET Box.

The maximum of nine GV-IO and GV-Relay modules can connect together, giving you a total of 72 digital inputs and 144 relay outputs.

Packing List

❶ GV-IO Box x 1
❷ GV-Relay Box x 1

❸ Power Adapter DC 5V x 1
❹ Installation Guide x 1

Connections

This illustration uses the GV-NET Box to bridge computer and the GV-IO Box. Instead, you can use the GV-NET Card or the GV-NET I/O Card as the bridge.
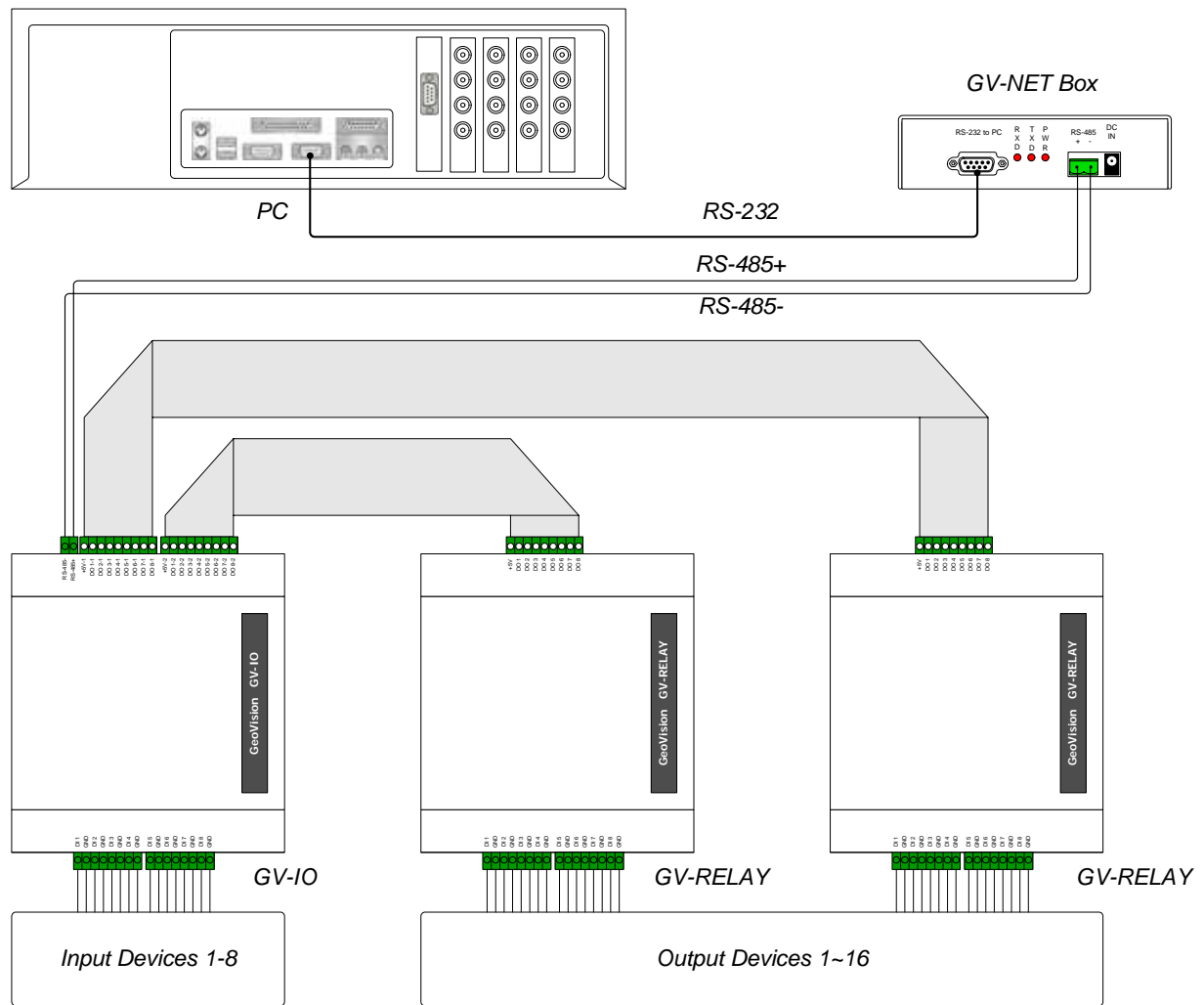

Figure 2-19   GV-IO, GV-Relay connections

Specifications

GV-IO Box		
Input	Input	8
	Input Signal	0-5V DC (Floating)
	High State	5V
	Low State	0V
	Wiring Label	GND, DI 1~ DI 8
Output	Output	16
	Output Circuit	TTL Open Collect
	Wiring Label	+5V-1, DO 1-1~DO 8-1
		+5V-2, DO 1-2~DO 8-2
Communication	RS-485, 9600 bps	
DC IN	Power Adapter DC 5V, 2A Inner Positive	
Environmental Condition	0 to 50 Degree C, 5%-95% (Non-Condensing)	
Dimensions	202 (W) x 39 (H) x 166 (D) mm	

GV-Relay Box	
Relay Output	RL1-RL8
Relay Control Source	+5V, DO 1~DO 8 Connecting Outputs of GV-IO
Relay Status	Normal Open
Relay Capacitance	6A / 250V AC, 10A / 125V AC, 5A / 28V DC
Relay On/Off Time	8ms / 5ms
Environmental Condition	0 to 50 Degree C, 5%-95% (Non-Condensing)
Dimensions	202 (W) x 39 (H) x 166 (D) mm

2.11 GV-Hub Box

The GV-Hub adds four RS-232/RS-485 serial ports through your computer's USB port. The plug and play USB solution for serial port extension is perfect for mobile instrumentation and POS applications.

Packing List

❶ GV-Hub Box x 1
❷ A to B USB Cable (1.2 meters) x 1
❸ DB9 RS-232 Cable (1.8 meters) x 4

❹ Installation CD x 1
❺ Installation Guide x1

Overview

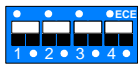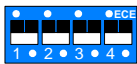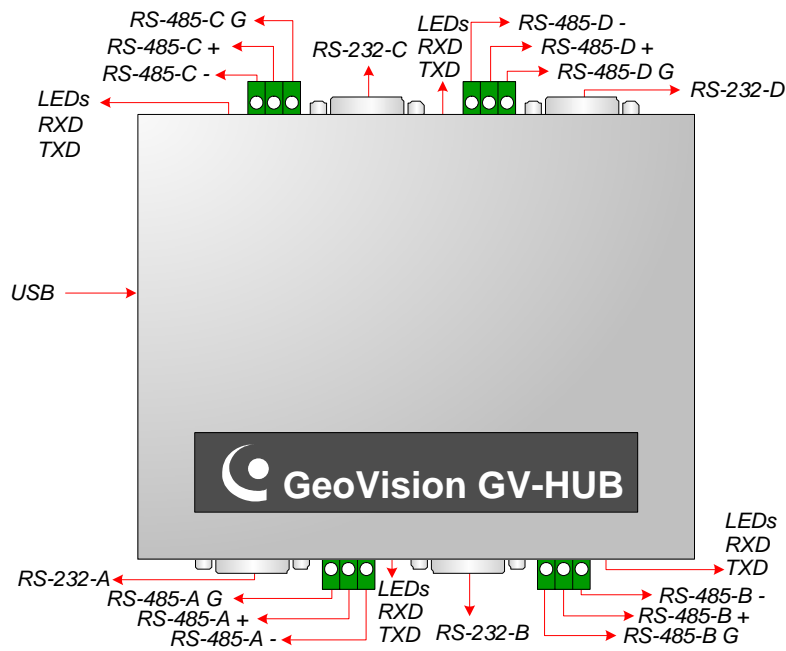*Figure 2-20   GV-Hub*

DIP Switches

To change the DIP switches, you must open the GV-Hub Box.

Default Setting		Standard Mode (TX Feedback)	

Note: There are four sets of RS-232 / 485 ports (A-D). In a single set, you can only choose RS-232 or RS-485 port for connection.

Connections

Following provides two examples of using the GV-Hub:

Connecting POS Systems

The GV-Hub can provide a local connection for up to four POS systems, and deliver transaction data to the GV-System over a USB cable.
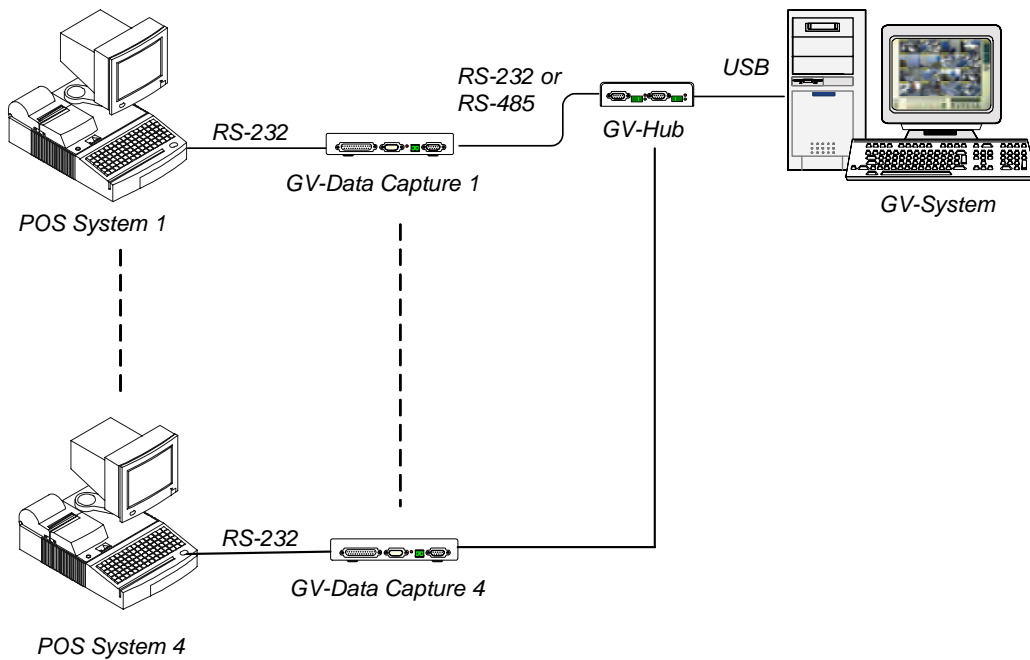

Figure 2-21   Connecting POS systems

Connecting RS-485 Devices

With the GV-Hub, the GV-System can connect up to 16 PTZ domes and nine GV-IO and GV-Relay modules simultaneously.
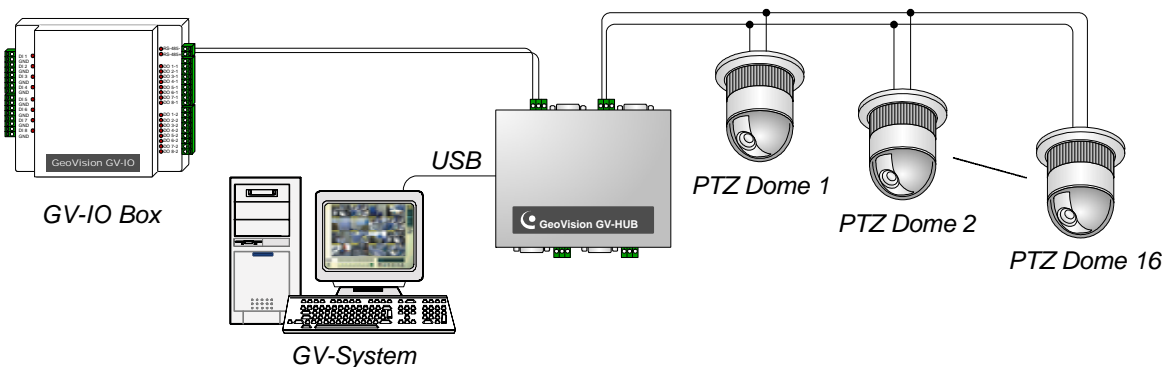

Figure 2-22   Connecting RS-485 devices

Installing Drivers

When you connect the GV-Hub Box to the computer, the Found New Hardware Wizard will automatically detect the device. Ignore the wizard, and follow these steps to install the drivers.

1. Insert the installation CD to your computer.

2. Run **GvUsb.exe**.

3. When this warning window appears, click **Continue Anyway**. The drivers will be installed automatically.
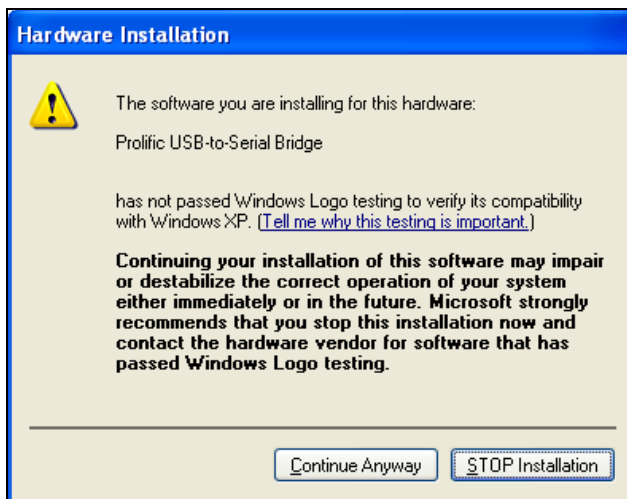
To verify the drivers are installed correctly, go to Device Manager. Expanding the Ports field, you should see the 4 entries for **Prolific USB-to Serial Bridge**.
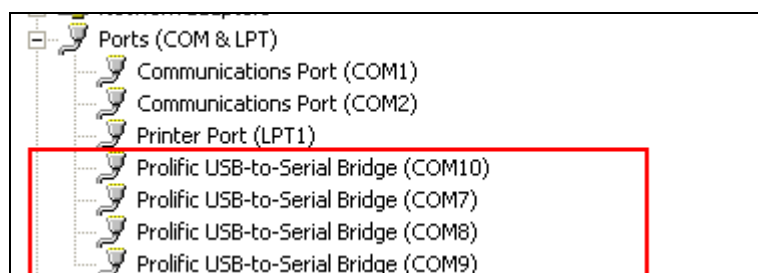
Specifications

Serial Interface	RS-232	Signal: DCD, RxD, TxD, DTR, GND, DSR, RTS, CTS
		Connecter: 4 x DB9 Male (A, B, C, D)
	RS-485	Signal: D+, D-, GND
		Connector: 4 x Terminal Block (A, B, C, D)
	Serial Line Protection	16 KV ESD for All Signals
USB	Compliance	USB 1.1, 1.0
		USB 2.0 Backward Compatible
	Speed	Full Speed 12 Mbps
Communication Parameters	Parity	None, Even, Odd
	Data Bit	7, 8
	Stop Bit	1 (Default), 2
	Flow Control	RTS/CTS, XON/XOFF
	Speed	600 bps to 115,200 bps
Environmental Conditions	0-55 Degree C, 5%-95% (Non-Condensing)	
Dimensions	103 (W) x 30 (H) x 125 (D) mm	

2.12 GV-COM Box

The GV-COM adds one RS-232/RS-485 serial port through your computer's USB port. The plug and play USB solution for serial port extension is perfect for mobile instrumentation and POS applications.

Packing List

❶ GV-COM Box x 1

❷ A to B USB Cable (1.2 meters) x 1

❸ DB9 RS-232 Cable (1.8 meters) x 1

❹ Terminal Resistor x 1

❺ Installation CD x 1
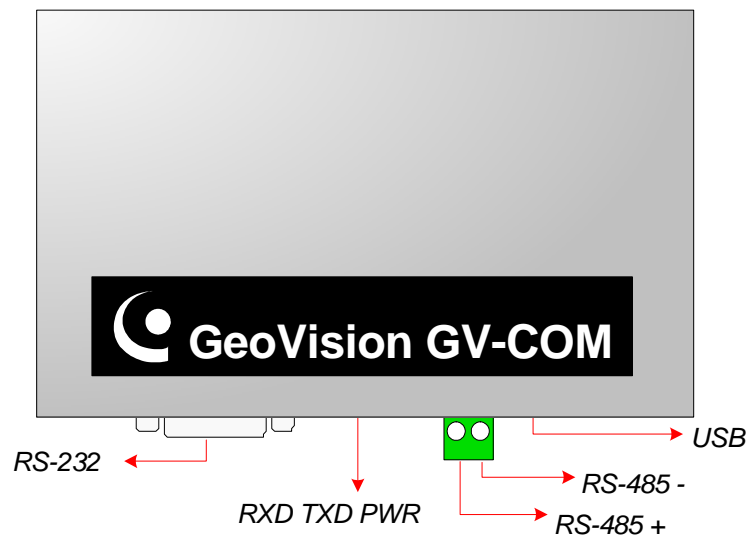
❻ Installation Guide x1

Overview

Figure 2-23   GV-COM

Long-Distance Connection

When the two conditions below are met, the supplied Terminal Resistor needs to be used:

1. Conneciton distance is greater than 600 meters.
2. High-speed baud rate is applied, ex. 115200.

The diagram below illustrates how to use Terminal Resistor on Terminal Block attached to the RS-485 device:
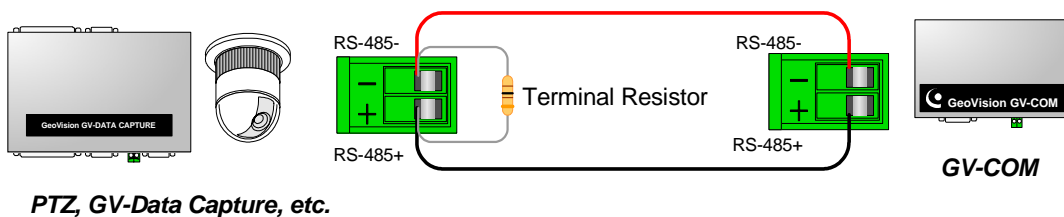

Figure 2-24   Terminal Resistor connections

Installing Drivers

When you coonect GV-COM to the computer, the Found New Hardware Wizard will automatically detect the device. To install drivers, follow the steps described in *Installing Drivers, 2.11 GV-Hub Box*.

To verify the drivers are installed correctly, go to Device Manager. Expanding the Ports field, you should see one entry for **Prolific USB-to-Serial Bridge**.
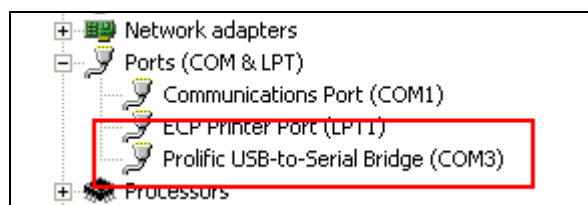
Specifications

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

2.13 GV-Data Capture V2 Box

The GV-Data Catpure V2 can integrate your POS systems (cash registers) with GV-Systems. Through the intergration, you can investigate a transaction with transaction data overlaying on video footage.

System Requirements

- Version 6.0.2.0 or above

For details on GV-Data Capture V2 Box, see *GV-Data Capture V2 User's Manual* attached with the product.

2.14 GV-Data Catpure V2E Box

The GV-Data Capture V2E is the network version of GV-Data Capture V2. With an Ethernet jack, the V2E allows you to integrate POS systems (cash registers) with the GV-System through network connection.

System Requirements

- Version 7.1 or above

For details on GV-Data Capture V2E Box, see *GV-Data Capture V2E User's Manual* attached with the product.

2.15 GV-Keyboard

The GV-Keyboard is designed to program and operate GV-Systems. Through RS-485 configuration, it can control up to 16 additional GV-Systems.

System Requirements

- Windows 2000 or XP
- Version V7.0 or above

For details on GV-Keyboard, see *GV-Keyboard Instruction Manual* attached with the product.

2.16 GV-IR Remote Control

The GV-IR Remote Control is designed for basic system operation.

System Requirements

- Windows 2000 or XP
- Version 6.1 or above

For details on GV-IR Remote Control, see *IR Remote Control User's Manual* attached with the product.