GeoVision inc
The Vision of Security

GV-GF Fingerprint Reader

User's Manual

Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.

GF1901.1902.1911.1912-A

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Regulatory Notices

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

Class A

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

CE Notice

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

RoHS Compliance

The Restriction of Hazardous Substances (RoHS) Directive is to forbid the use of hazardous materials of production. To meet the RoHS Directive requirements, this product is made to be RoHS compliant.

WEEE Compliance

This product is subject to the Waste Electrical and Electronic Equipment (WEEE) Directive and made compliant with the WEEE requirements.

Caution

- The fingerprint reader is designed only for indoor usage. Avoid exposing to sunshine or rains.
- To keep the fingerprint reader in good working condition, it is recommended to have regular maintenance and physical cleaning of the reader.

1. Introduction

The fingerprint reader can work with GV-AS Controller and GV-ASManager to create a complete access control system. Depending on the model of the fingerprint reader, up to three types of operation modes are supported: Card + Fingerprint, Fingerprint Only and Card Only.

Card + Fingerprint Mode (GV-GF1901 / 1902 / 1911 / 1912):
With the fingerprint reader only, you can enroll and manage users through the supplied Manager Enroll Card and Delete Card, along with optional MIFARE user cards.

The fingerprint templates are stored in the user card. The user gains access by scanning both his finger and his card. The reader compares the presented finger with digital template stored in the card. If the finger is successfully authenticated, a signal is sent to momentarily activate the door relay of the controller.

Fingerprint Only Mode (GV-GF1901 / 1902 / 1911 / 1912):
The fingerprints are enrolled through a **GV-GF1901 / GV-GF1911** reader installed on the computer running the GV-ASManager software. The fingerprint data are distributed through GV-ASManager to the assigned fingerprint readers installed on GV-AS Controllers for access control.

Card Only Mode (GV-GF1911 / 1912):
This mode requires the users to present their cards only to be granted access.

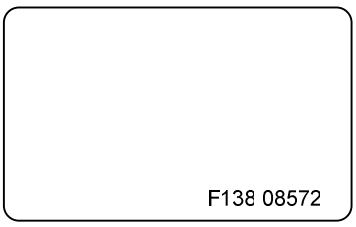
1.1 Packing List

If any of the items are missing or damaged, contact your dealer to arrange a replacement.

- Fingerprint reader x 1 (with a cable of 100 cm / 3.28 feet)
- Manager Enroll Card x 1
- Manager Delete Card x 1
- Self-Tapping Screw (M3 x 6L) x 2
- Self-Tapping Screw (M4 x 15L) x 3
- Plastic Screw Anchor x 3 (GV-GF1901 / 1902)
- Plastic Screw Anchor x 4 (GV-GF1911 / 1912)
- Buzzer Hole Plate
- Security Torx
- Software CD

1.2 Options

You can order the following optional accessories:

User Cards and Tags	The user card comes in two forms: **Card** and **Tag**. They look similar to the following examples. You can find the serial number **Fxxx,xxxxx** at the bottom right corner of the card, or at the center of the tag.  
PC Service Package	The package includes one reader mount, and one USB cable using for firmware upgrade. See *6. Upgrading Firmware* later.

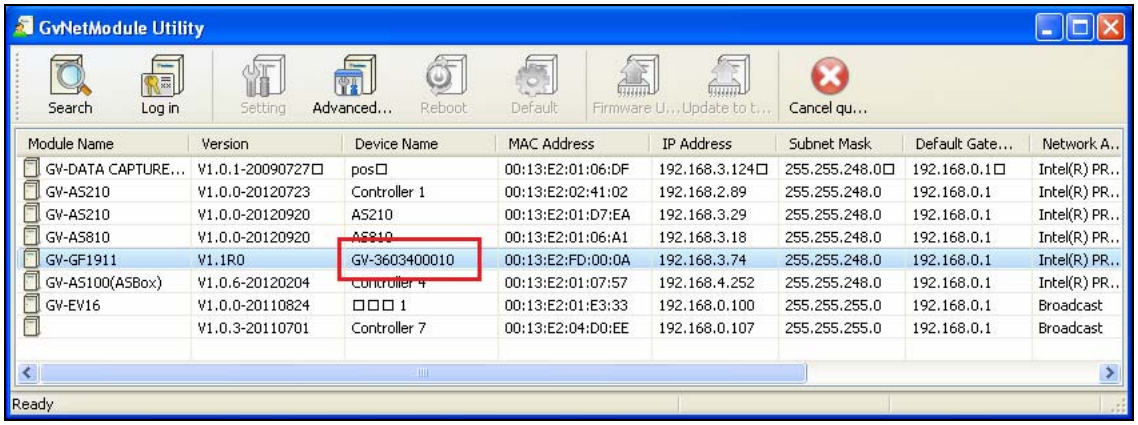
Note:

1. For **GV-GF1901** and **GV-GF1902**, it is required to purchase GeoVision's user cards and tags to work with.
2. For **Card + Fingerprint Mode**, it is required to purchase GeoVision's user cards and tags to work with.
3. Be sure that your user card has the serial number starting with the letter F; otherwise, you cannot record the fingerprints to the user card.

1.3 Serial Number

To find the serial number of your fingerpirnt reader, see the **XID** number on the back of fingerprint reader.

For **GV-GF1911** and **GV-GF1912**, you can also find the serial number of your fingerprint reader by using **Net Module Utility** supplied on the software CD. For details to use the utility, see *2.2.1 Looking up the IP Address*.



1.4 Compatible Versions for Network Connection

GV-GF1911 and **GV-GF1912** support network connection with GV-ASController and GV-ASManger. The network connection only works when the following ASManager software version and Controller firmware version work together.

- **GV-ASManager:** V4.0 or later
- **GV-AS100 / 110 / 120:** firmware V1.06 or later
- **GV-AS400:** firmware V1.04 or later
- **GV-AS210 / 810:** firmware V1.0 or later

2. Connecting GV-AS Controller

Depending on the model of the fingerprint reader, three types of communication links are provided: **Wiegand, RS-485** and **TCP/IP (LAN)**.

2.1 Connecting through Wiegand Interface

Supported models: **GV-GF1901 / 1902 / 1911 / 1912**.

Physical Connection

The fingerprint reader is connected with an unshielded 9-wire cable of 100 cm / 3.28 feet. Connect these 4 unshielded wires to the assigned pins on the Wiegand interface of the GV-AS Controller: Red, Black, White and Green wires.

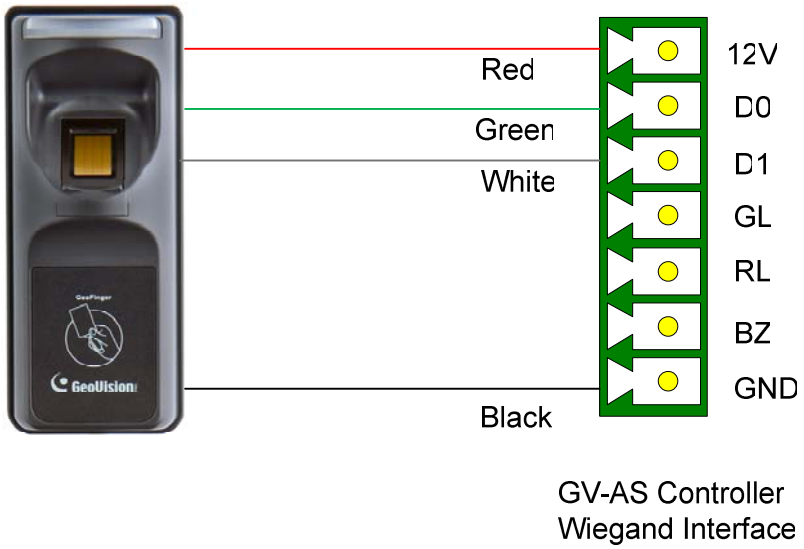


Figure 2-1

The table below shows the wire assignments of the fingerprint reader used for Wiegand connection.

Wire	Red	Black	White	Green	Yellow	Blue	Orange	Brown	Silver
Function	12V	GND	Data-1	Data-0	N/C	N/C	N/C	N/C	N/C

For the wiring of extending distance it is recommended to use the standard RS-485 cable (a twisted pair of 24 AWG wires). The maximum distance of the Wiegand output cable should be restricted to a length of 30 meters (98.43 feet).

Function Settings

To define the fingerprint reader connected to the GV-ASController. On the Web interface of GV-ASController, click **Wiegand Setting** in the left menu. The Wiegand Configuration page appears. Select the function that the fingerprint reader is used for, and click **Submit**.

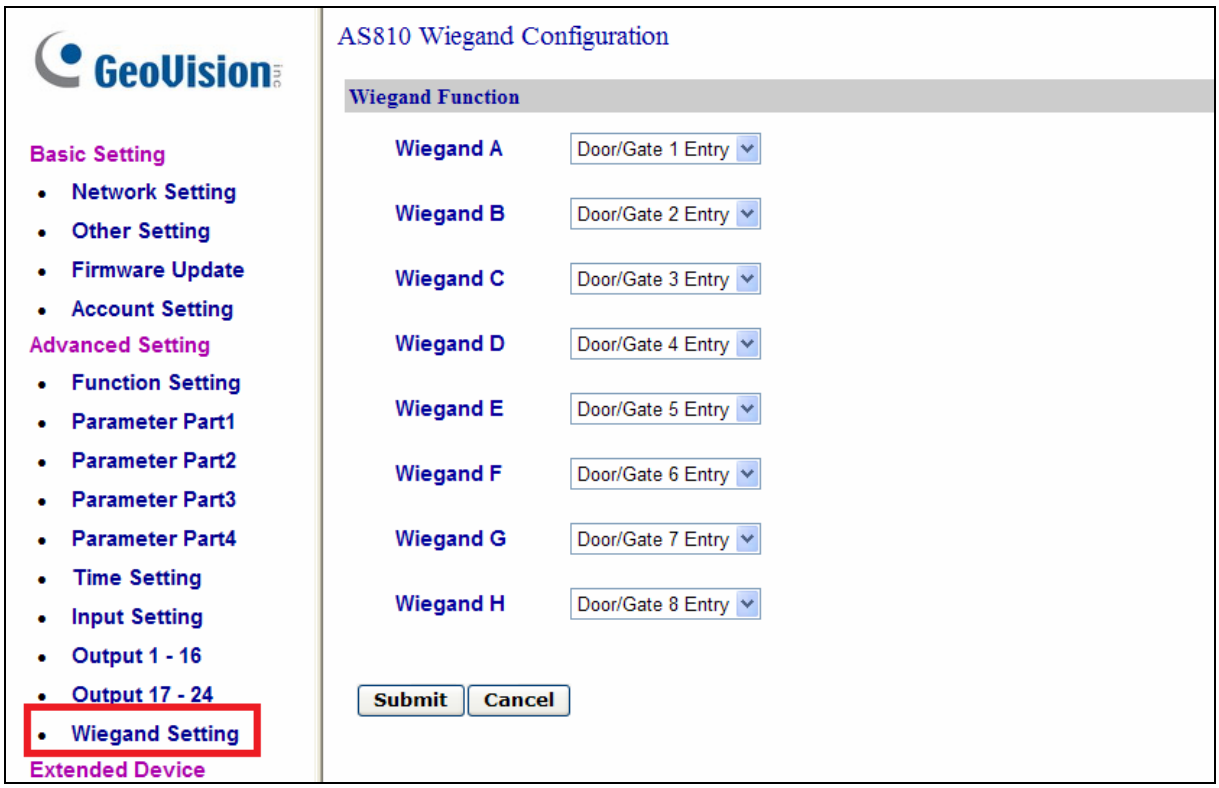


Figure 2-2

2.2 Connecting through RS-485 Interface

Supported models: **GV-GF1901 / 1902 / 1911 / 1912**.

Physical Connection

Use the terminal block on the above four reader models for RS-485 connection to the GV-AS Controller.

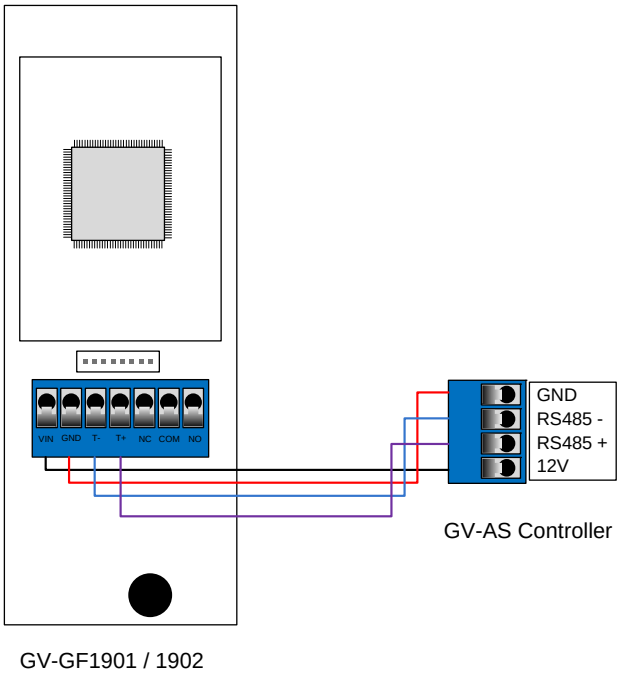


Figure 2-3

The table below shows the pin assignments of the fingerprint reader used for RS-485 connection.

Pin	VIN	GND	T-	T+
Function	12V	GND	RS-485 -	RS-485 +

Function Settings

To define the fingerprint reader connected to the GV-ASController. On the Web interface of GV-ASController, click **Extended Reader** in the left menu. The **Extended Reader Configuration** page appears. Type **Serial Number** of your fingerprint reader (See *1.3 Serial Number*), and select **Function** that the fingerprint reader is used for, and click **Submit**. If the fingerprint reader is detected, a greem mark will appear in the Setting Status field.

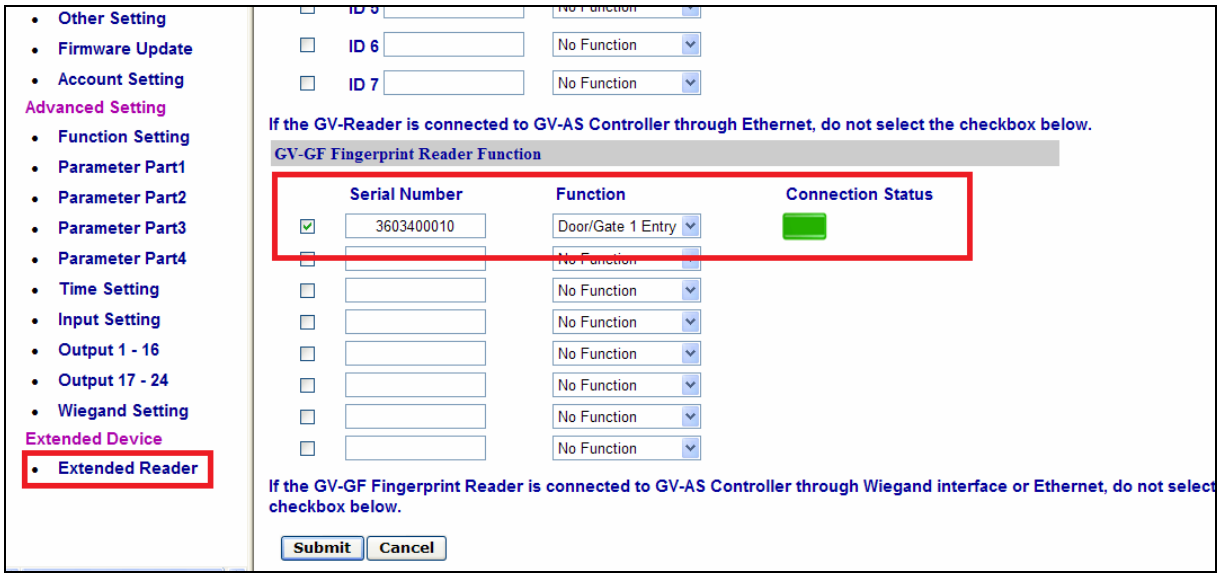


Figure 2-4

Note: For RS-485 connection, make sure to check the box before the serial number to establish connection.

2.3 Connecting through TCP/IP Interface

Supported models: **GV-GF1911 / 1912**

Physical Connection

The fingerprint reader and GV-AS Controller can be connected together through LAN. You need to prepare a 12V DC power adapter to connect the fingeprint reader to a power source.

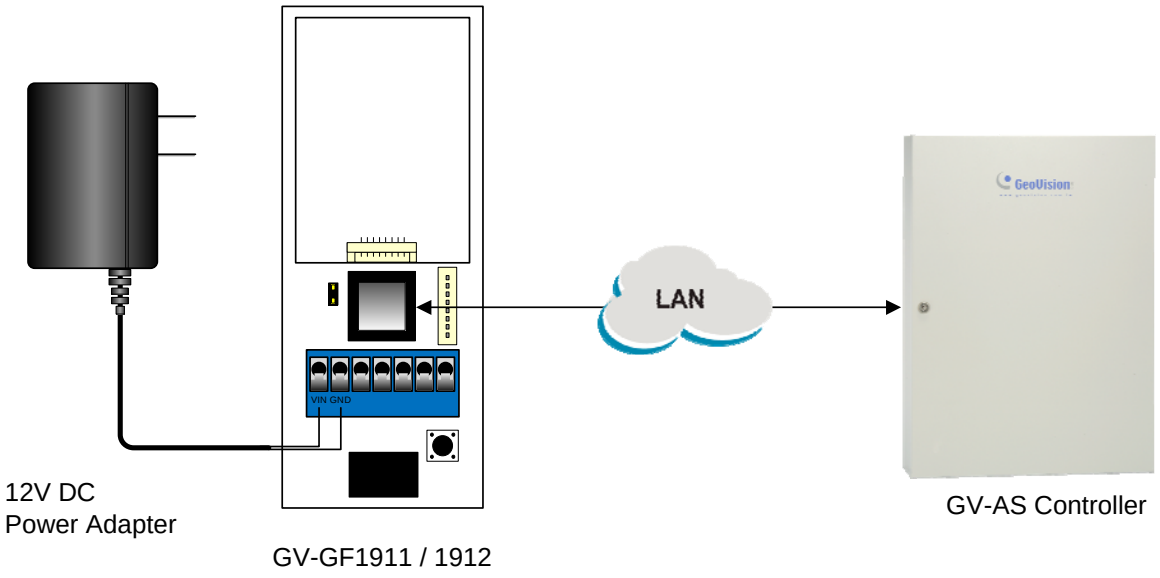


Figure 2-5

Note: Besides using a 12V DC power adapter, you can choose to connect the power supplied by GV-AS Controller.

The table below shows the pin assignments of the fingerprint reader used for power connection.

Pin	VIN	GND
Function	12V	GND

Function Settings

After physical connection, you need to define the function of the fingerprint reader on the Web interface of GV-AS Controller. See the *Function Settings* section in *2.2 Connecting through RS-485 Interface*.

Note: Make sure your GV-ASController and GV-ASManager suport the network connection. See *1.4 Compatible Versions for Network Connection*.

2.3.1 Looking Up the IP Address

By default, **GV-GF1911 / 1912** is assigned with an unused IP address by the DHCP server when the fingerprint reader is connected to the network. This IP address remains unchanged unless you unplug or disconnect your fingerprint reader from the network.

Note: If your router does not support DHCP, the default IP address will be **192.168.0.10**. The default login ID and password are **admin**.

Follow the steps below to look up the IP address of your fingerprint reader:

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1. Install **Net Module Utility** from the Software CD.
2. Run the utility. The **GV NetModule Utility** window appears and automatically searches for the GV-AS Controller and GV-GF1911 / 1912 on the same LAN.

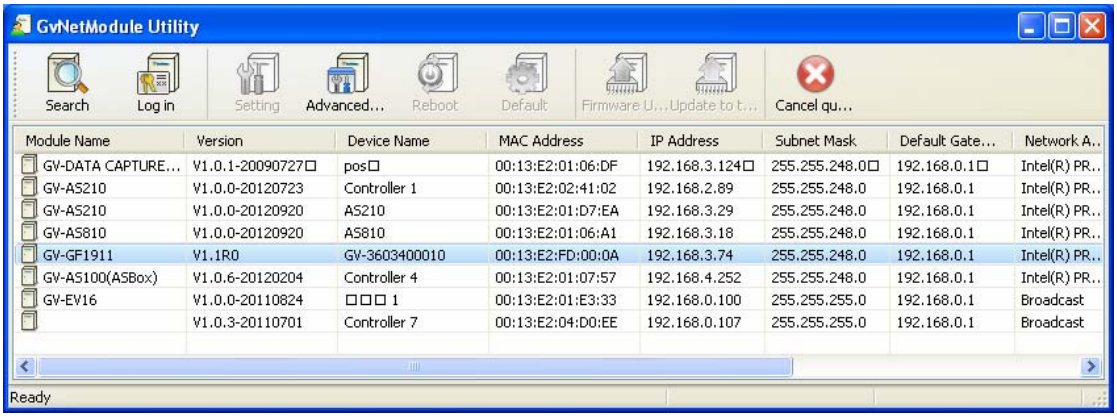

Figure 2-6

3. Click the **Module Name** column to sort.
4. Find the **Mac Address** of the fingerprint reader to see its IP address.

2.3.2 Setting Connection with GV-AS Controller

1. On the Web interface of GV-ASController, click **Extended Reader** in the left menu. The **Extended Reader Configuration** page appears. Type **Serial number** of your fingerprint reader (See *1.3 Serial Number*), and select **Function** that the fingerprint reader is used for, and click **Submit**. The red mark appears in the Setting Status filed which means the connection is not established. See Figure 2-2.
2. To access the Web interface of GV-GF1911 /1912, type the IP address you find on Net Module Utility on the browser. You can also double-click the fingerprint reader found on Net Module Utility, type its default ID and Password **admin**, and click the **Advanced Setting** button to access it.
3. Click **SETTINGS** and select **GV-AS Controller**. This page appears.

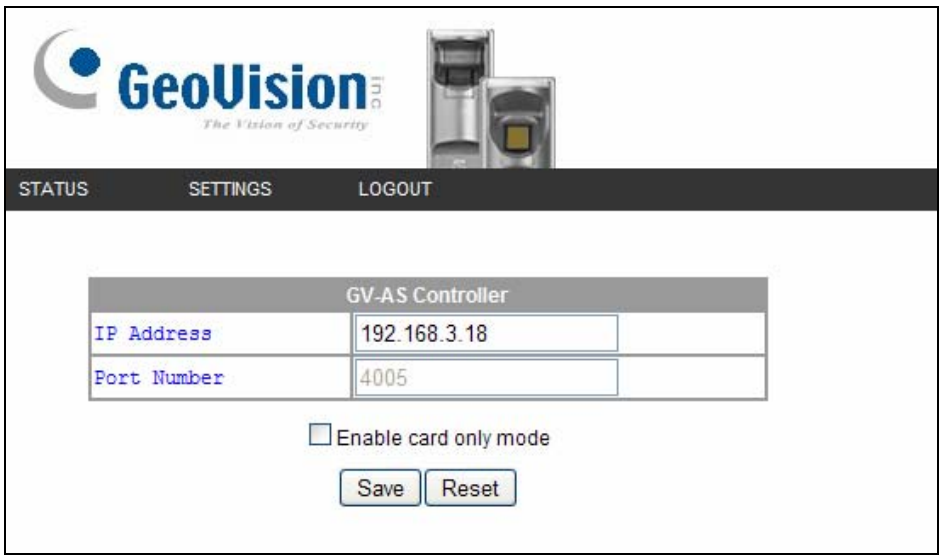

Figure 2-7

4. Type the **IP address** of GV-AS Controller and click **Save**.
5. Back to the Web interface of GV-AS Controller, you should see the greem mark appear in the Setting Status field. It means the connection between the fingerprint reader and GV-AS Controller is established.

Note: If the fingerprint reader fails to connect to the GV-AS Controller, the reader will beep till the connection is established.

3. Fingerprint Only Mode

The Fingerprint Only mode must work with the **GV-ASManager** software and the **GV-GF1901 / 1911** reader to enroll fingerprints. Through GV-ASManager, the fingerprint data are distributed to the fingerprint readers installed on GV-AS Controllers. To gain access, the user's fingerprint must match the enrolled fingerprint.

Note: GV-GF1911 and GV-GF1912 are only supported in GV-ASManager 4.0 or later.

3.1 Enrolling Fingerprints

To enroll fingerprint data, you need to connect **GV-GF1901 / 1911** to the computer running GV-ASManager through RS-485 connection. To establish RS-485 connection to the computer, a RS-485 to RS-232 converter, such as GV-COM, GV-Hub or GV-NET/IO Card, is required.

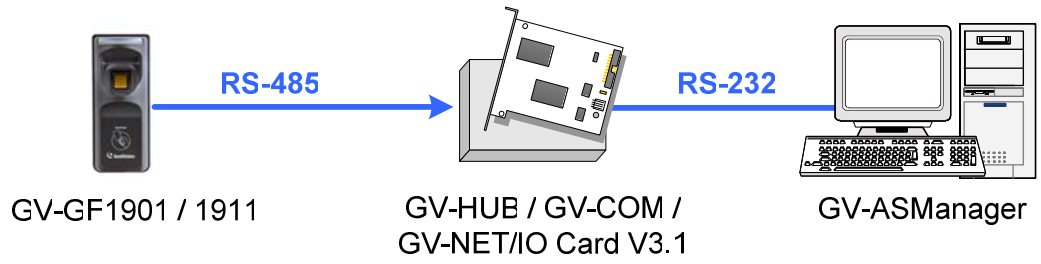

Figure 3-1

Note:

1. Fingerprint enrollment does not support Wiegand connection.
2. If your GV-AS Controller is not equipped with any card readers, it is still required to enroll cards because each fingerprint needs to go along with a card number. In this case, you can create virtual card numbers to represent the enrolled fingerprints.

Before you start, you have to complete the card and user enrollments. See *4.3 Setting Cards* and *4.6 Setting User* in *GV-ASManger User's Manual.*

1. On the menu bar of GV-ASmanager, click **Personnel** and select **Users**. The User List window appears.
2. Double-click one user listed in the window. The User Setup dialog box appears.
3. Click the **Fingerprint** tab. This dialog box appears.

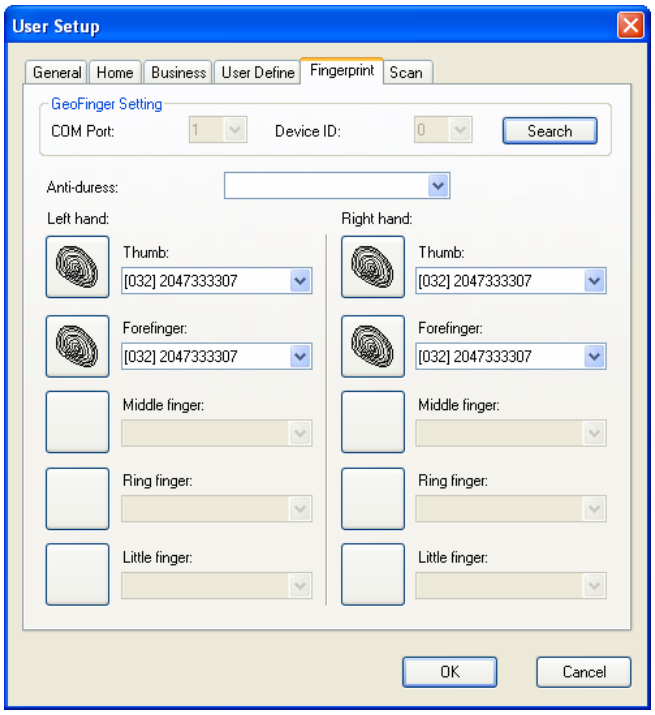

Figure 3-2

4. Click the **Search** button to detect the fingerprint reader connected.
5. In the Left Hand and Right Hand sections, click any finger square to enroll the fingerprint.
6. Place the specific finger on the fingerprint reader. It is required to register the same fingerprint twice to complete the enrollment. All ten fingerprints of a user can be enrolled.
7. Use the drop-down list to assign a card to the fingerprint.
8. To delete the enrolled fingerprint, place the mouse pointer on the desired fingerprint image. The button appears. Click the button to delete the fingerprint.
9. For the **Anti-duress** function, select a fingerprint from the Anti-duress drop-down list. When the user is forced to open the door under threat, he can present the designated finger to activate an alarm and send a warning signal to the GV-ASManager.
10. Click **OK** to apply the settings.

3.2 Uploading Fingerprints to Fingerprint Readers

There are two ways to upload fingerprint data from GV-ASManager to fingerprint readers.

For **GV-GF1901 / 1902 / 1911 / 1912**, data is first sent to the GV-AS Controller through network connection and then sent to GV-GF1901 / 1902 through RS-485.

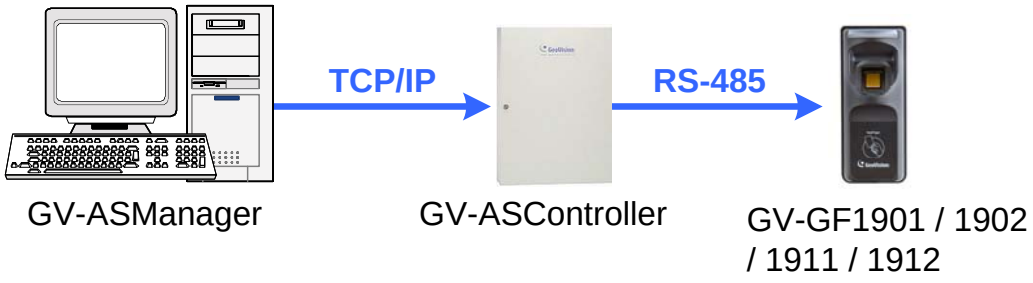

Figure 3-3

For **GV-GF1911 / 1912**, data can be sent directly from GV-ASManager through TCP / IP.

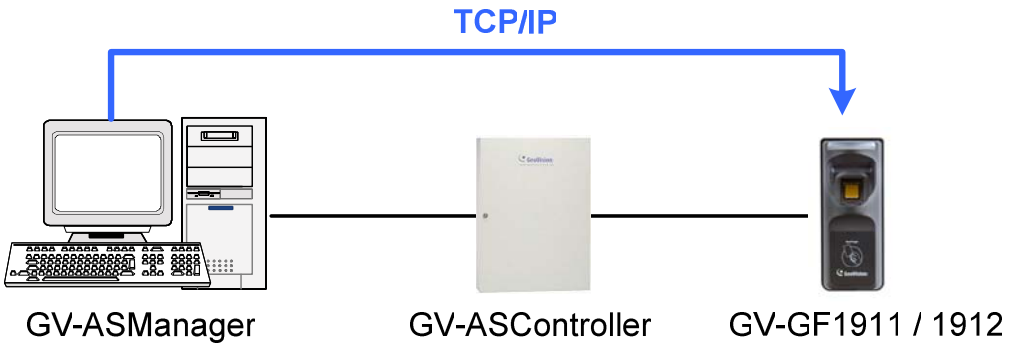

Figure 3-4

To upload data from GV-ASManager to GV-GF1911 / 1912, follow the instruction below from step 1. For GV-GF1901 / 1902, skip to step 4.

A. Connect GV-ASManager and Fingerprint Reader (GV-GF1911 / 1912 only):

1. On the menu bar of GV-ASManager, click **Setup** and select **Device**.
2. Double-click a controller and select a **Gate** tab. This dialog box appears.

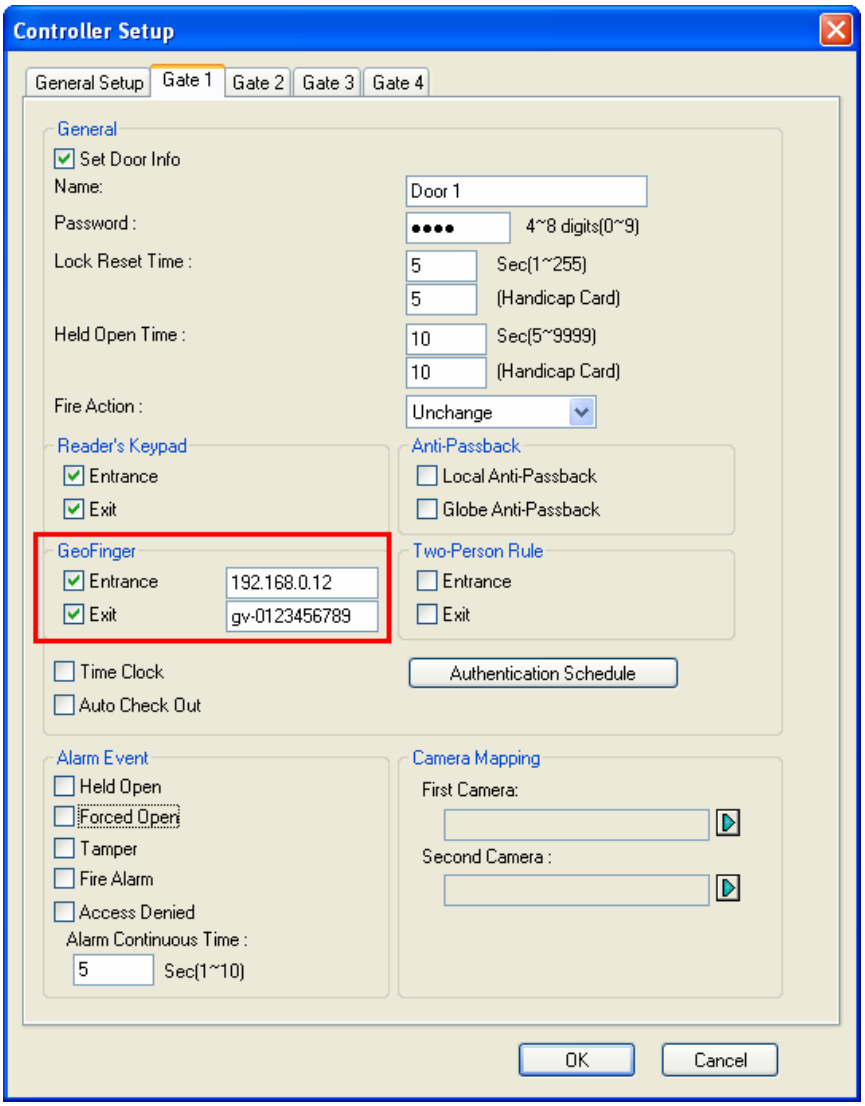

Figure 3-5

3. Under GeoFinger, select **Entrance** or **Exit** and type the IP address of the GV-GF1911 / 1912 or type gv- and the 10-digit serial number (see *1.3 Serieal Number*). For example: GV-0123456789.

B. Define Fingerprint Readers on the Controller Web Interface

4. Ensure the fingerprint reader has been set up on the GV-AS Controller. When the fingerprint reader is detected on the GV-AS Controller, a green mark should appear in the Setting Status field on the GV-AS Controller's Web interface. See the *Function Settings* section in *2.1 Connecting through Wiegand Interface*.

C. Select and Upload Fingerprints Data on GV-ASManager to Fingeprint Readers

5. On the menu bar of GV-ASManager, click **Setup** and select **Fingerprint Access**. This dialog box appears.

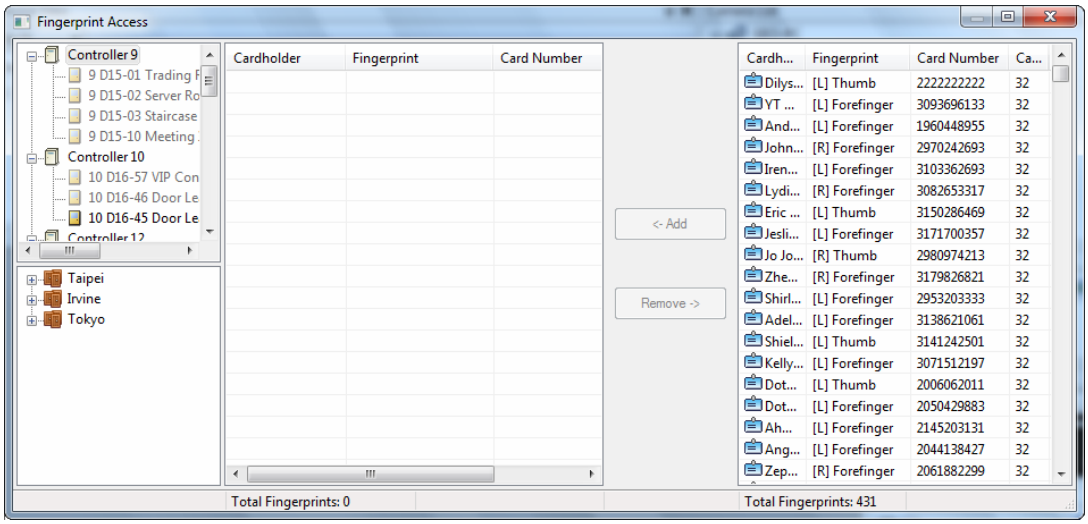

Figure 3-6

6. To upload the fingerprints to a door or a controller, select the desired Door/Gate or controller in the top-left panel. If you have assigned multiple controllers to a door group, select the desired door group in the bottom-left panel. See *Uploading Fingerprints to Controllers Using Door Groups* later in this chapter to see how to set up door groups.
7. Select the desired fingerprint data on the right side. The **Add** button becomes available.
8. Click the **Add** button to upload the selected fingerprint data to the selected Door/Gate or door group. When the uploading is complete, check marks will appear in the **In** (Enter) or **Out** (Exit) columns. The resulting window after uploading may look like this:

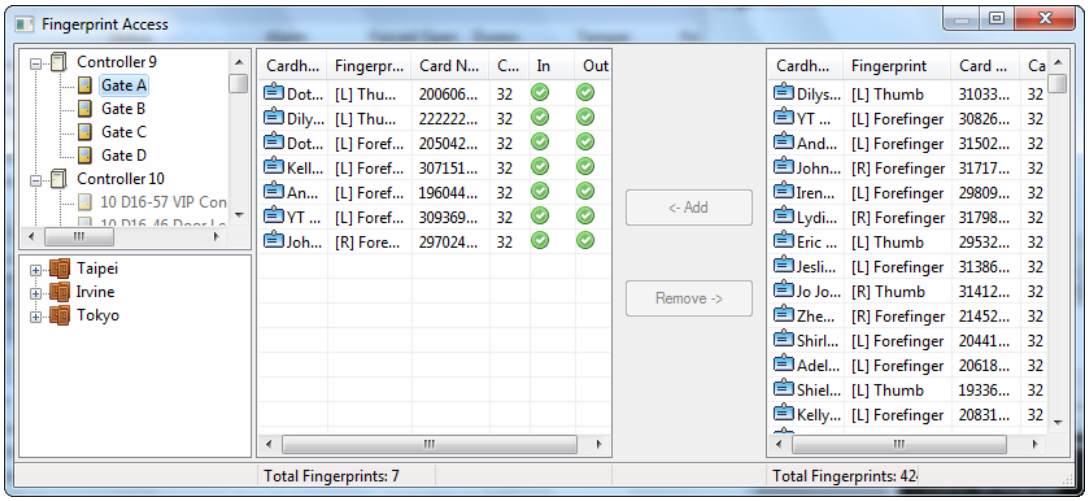

Figure 3-7

Tip:

1. If some green checkmarks are missing in the **In** or **Out** columns, right-click the door / gate in the Device View and select **Sync GeoFinger** to re-upload the data.
2. Each fingerprint reader can store up to 1,900 fingerprints.

3.3 Uploading Fingerprints Using Door Groups

When a large number of GV-AS Controllers are connected to the GV-ASManager, you can organize the GV-AS Controllers into different door groups. Using door groups, you can quickly upload fingerprints to all the GV-AS Controllers in a door group instead of uploading to each controller one by one.

1. On the menu bar of GV-ASManager, click **Setup** and select **Door groups**. This window appears and the connected controllers are listed on the right.

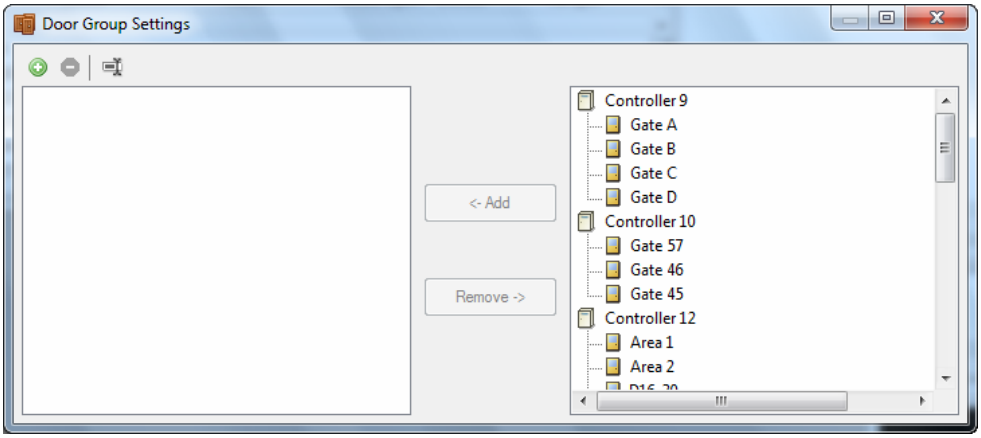

Figure 3-8

2. Click the **Add Group** button . A new group is created.
3. Click the new group and click the **Rename Group** button to rename the group.
4. Select the door group and then select the controllers to add to the group.
5. Click the **Add** button. The selected GV-AS Controllers are now assigned to the group.

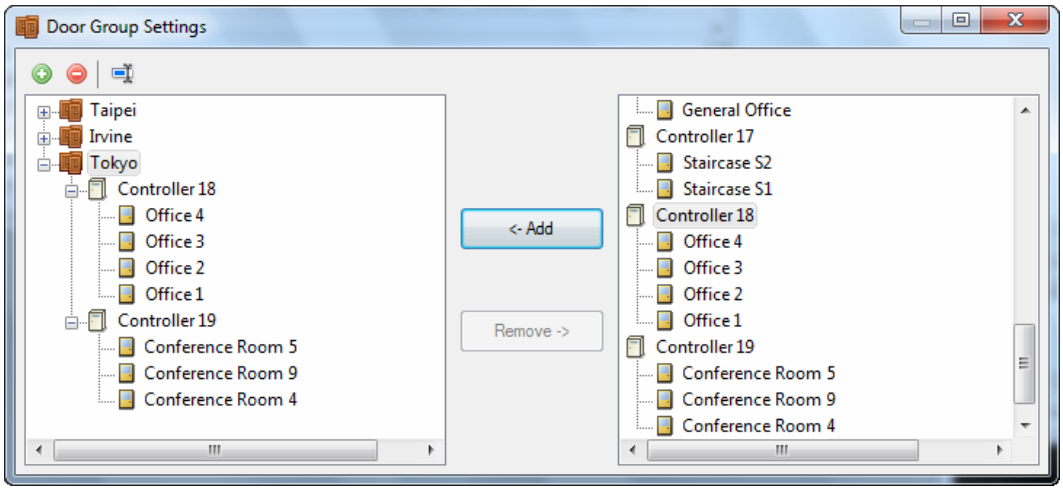

Figure 3-9

4. Card + Fingerprint Mode

4.1 Enrollment

The user's fingerprints are stored in the user card and each user card can store up to 2 fingerprints. The user must gain access by scanning both the user card and the finger.

Cards Required for Enrollment

- Manager Enroll Card
- User Card

Note: For Card+Fingerprint mode, it is required to purchase GeoVision's user cards and tags to work with.

Enrollment Procedures

	**Step 1:** In the standby mode, the light is blue on. Present the Manager Enroll Card. The light starts blinking green.
	**Step 2:** Present the User Card till the light blinks blue. Or present the Manager Enroll Card to exit the enroll mode.

	**Step 3:** With the light blinking blue, scan your fingerprint till beep. Withdraw your finger. The light turns green and then blinks blue.
	**Step 4:** Scan the same fingerprint again till beep, and withdraw your finger. The light again turns green and then blinks green. **Note:** It is required to scan the same fingerprint twice to complete the enrollment.
	**Step 5:** Repeat Steps 3 and 4 to scan the second fingerprint if needed. The same user card can store up to 2 fingerprints.
	**Step 6:** Present the User Card to record fingerprints till beep. The light turns green and then steady blue. Then you can use the Card Plus Fingerprint on the fingerprint reader.

Note:

1. You will need the corresponding user card when deleting an individual user. Once you lose the user card, you cannot delete its related user from the reader.
2. The new fingerprints enrolled will replace the existing enrolled fingerprints.

4.2 Deletion

Card data will be deleted from the reader and fingerprint templates will be erased from the user card.

Cards Required for Deletion

- Manager Delete Card
- User Card

Note: For Card+Fingerprint mode, it is required to purchase GeoVision's user cards and tags to work with.

Deletion Procedures

	**Step 1:** In the standby mode, the light is blue on. Present the Manager Delete Card. The light starts blinking red.
	**Step 2:** With the light blinking red, present the User Card. The light starts blinking green. Present the User Card again to delete all fingerprints stored in the card. When the deletion is complete, the light turns green and then steady blue.

4.3 Fingerprint Reader on Service

After you connect the fingerprint reader to the controller, present the user card. The light on the reader will start blinking blue. Then scan your finger to gain access.

1. If the presented fingerprint matches any record in the card, the light will turn from blue to green. Access signal will be passed to the controller.
2. If the presented fingerprint does NOT match the record in the card, the light will turn from steady blue to blinking red with beeps for three times. Then the light will come back to a steady blue. The reader will not pass access signal to the controller.

5. Card Only Mode

This access mode, allowing the users to only present their cards to be granted access, is only supported by **GV-GF1911** and **GV-GF1912**. This mode supports any MIFARE class card adhering to ISO14443A and with 56 MHz.

For **third-party MIFARE class card**, you need to access the Web interface of GV-GF1911 / 1912, and select **Enable card only mode** to enable the function. To access the Web interface, see *2.3.1 Looking up the IP Address* to find the fingerprint reader's IP address for login.

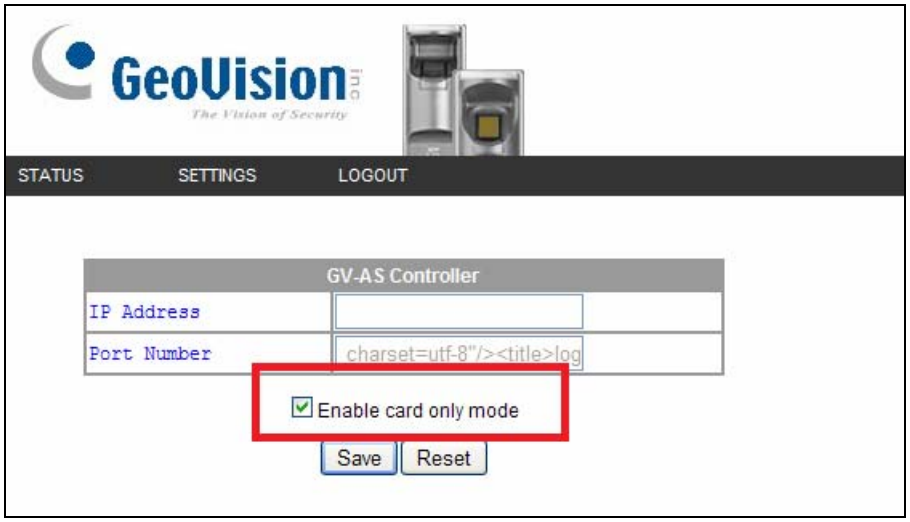

Figure 3-9

6. Connecting an Alarm Device

For the user of **GV-GF1901** / **1902 / 1911 / 1912**, you can connect one output device like a siren to the reader for warning when the access is granted.

The example below illustrates the connection of an output device to the fingerprint reader. Connect (+) point on the output device to **COM** on the fingerprint reader, connect the (-) points of the output device and the external power supply together, and connect the (+) point on the external power supply to **NO** or **NC** on the fingerprint reader based on the state of the output device.

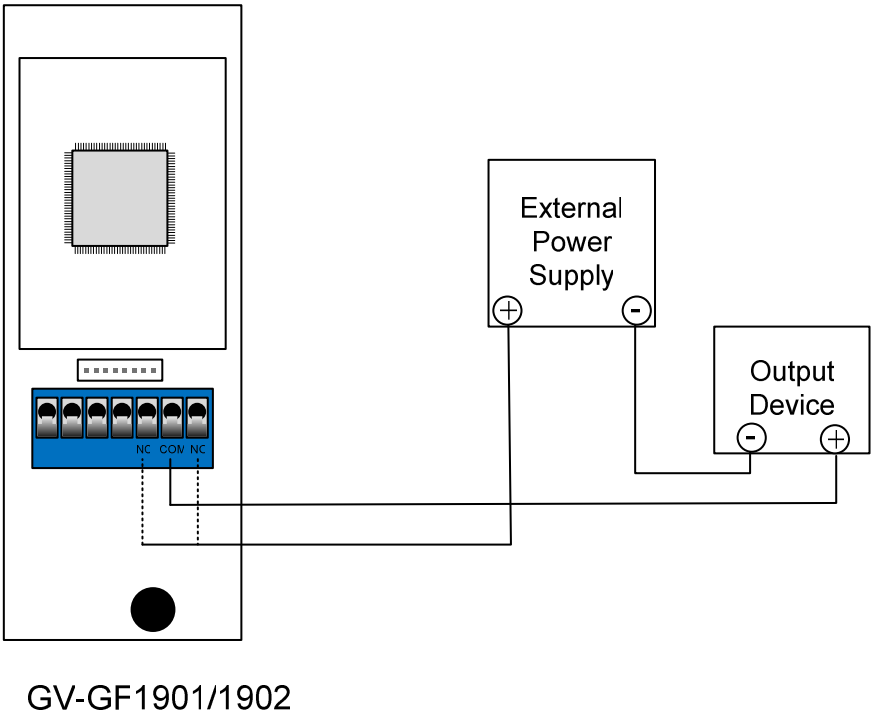

Figure 6-1

7. Upgrading Firmware

For the user of **GV-GF1901** / **1902 / 1911 / 1912**, you can upgrade the firmware to the new version. Firmware upgrade is done through the **AutoISP** software, which are available on the software CD. The AutoISP software will detect the current version of your fingerprint reader and then automatically upgrade it to the new version.

7.1 Connecting to a Computer

You need to connect the fingerprint reader to a computer for firmware upgrade. For this connection, one of these optional accessories is required: **a USB cable** *(see PC Service Package, 1.2 Options*), **GV-HUB** or **GV-COM**.

Using the USB Cable

Using the USB cable from the optional PC Service Package, connect the fingerprint reader to a computer as illustrated below.

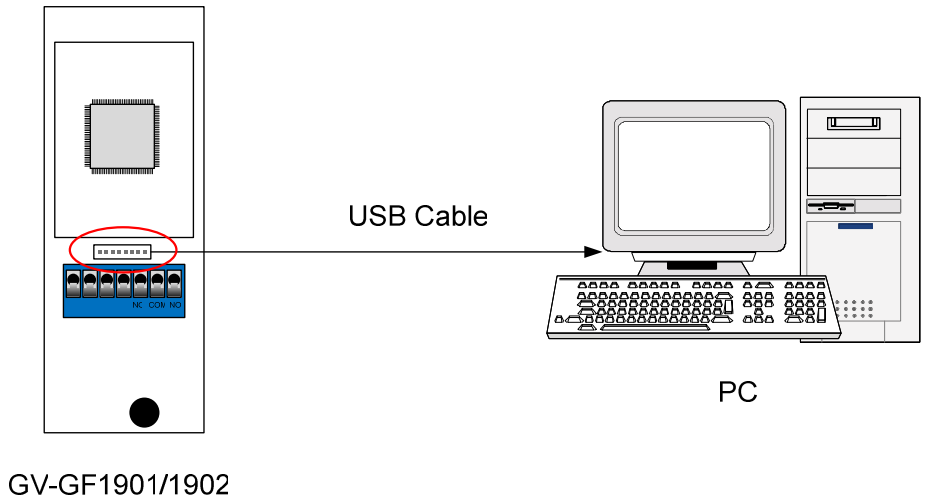

Figure 7-1

Using the GV-HUB or GV-COM

1. Connect the fingerprint reader to a computer through a GV-COM or GV-HUB, which provides the RS-485 to RS-232 function.
2. Power on the fingerprint reader. You can connect the **12V** and **GND** wires from the GV-AS Controller to the fingerprint reader. The diagram below illustrates the connection among fingerprint reader, GV-COM / GV-HUB and a computer. You can also prepare a **12V DC Power Adapter** to connect the fingerprint reader to a power source.

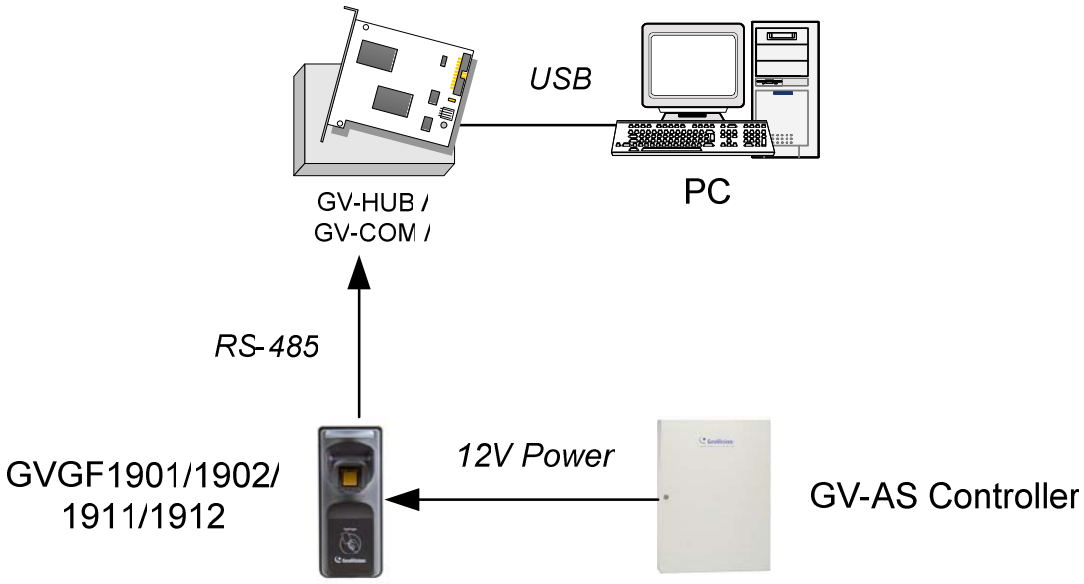

Figure 7-2

7.2 Installing Software

To upgrade the firmware for the fingerprint readers, you need to install the **AutoISP** software from the software CD to the dedicated computer. To install firmware upgrade software, follow the steps below:

1. Insert the software CD to the computer. It runs automatically and the following window pops up.

Figure 7-3

2. Select **Install Firmware upgrade utility** to install the **AutoISP**.

3. Run **AutoISP**. This dialog box appears.

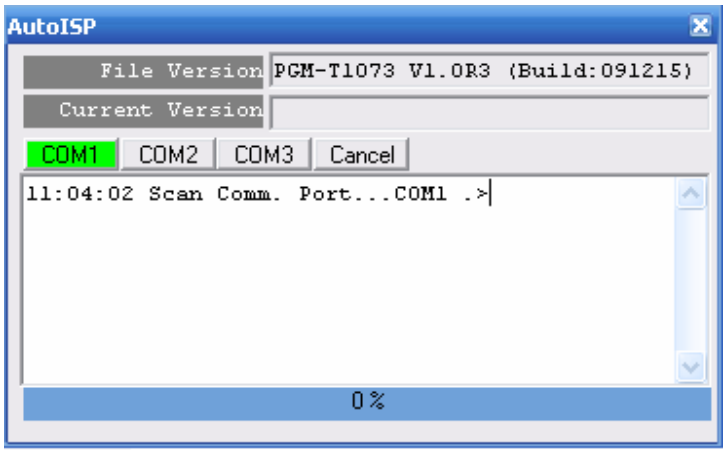

Figure 7-4

4. Wait for the **AutoISP** detecting the COM port that the fingerprint reader is connected to and automatically upgrading the firmware.

5. When the **AutoISP** automatically finishes firmware upgrading, the current version number shown in the dialog box will match the file version number. Click  to close the dialog box.

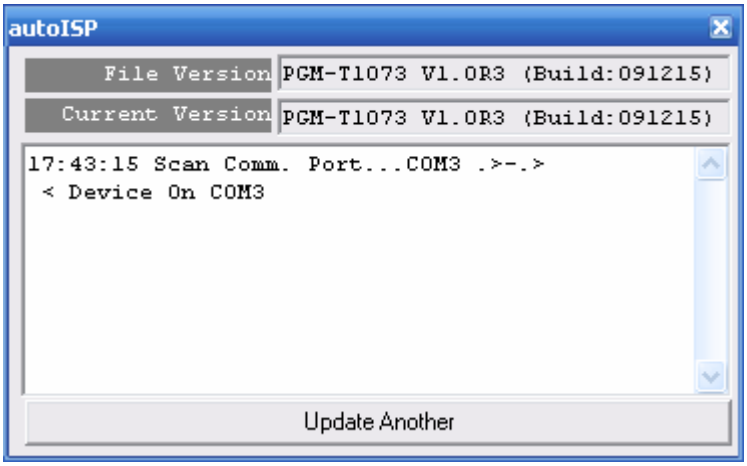

Figure 7-5

Specifications

Model	GV-GF1901	GV-GF1902
		
Application	Indoor use only	
Communication Interface	Wiegand 26, RS-485	Wiegand 26,RS-485
Sensor	Capacitive	Optical
Sensing Area (H x W)	18 x 13 mm / 0.71 x 0.51 in	20 x 17 mm / 0.79 x 0.67 in
Operation Mode	Fingerprint Only/ Fingerprint + Card	Fingerprint Only / Fingerprint + Card
Number of Fingerprints supported	1,900 (for Fingerprint Only mode)	
Supported Card	ISO14443A, MIFARE Class, 13.56 MHz	
Output	1 Port (240V, 2.5A)	1 Port (240V, 2.5A)
Power	DC 7.5V ~ 12V, Max 250mA	
Operating Temperature	0 ~ 65°C / 32 ~ 149°F	
Humidity	10% ~ 90%	
Dimensions (H x W x D)	130 x 54 x 43 mm / 5.12 x 2.13 x 1.69 in	130 x 54 x 38 mm / 5.12 x 2.13 x 1.50 in
Note: It is required to purchase GeoVision user cards and tags to work with GV-GF1901 and GV-GF1902.		

Model	GV-GF1911	GV-GF1912
		
Application	Indoor use only	
Communication Interface	Wiegand 26, RS-485, TCP/IP (LAN)	
Sensor	Capacitive	Optical
Sensing Area (H x W)	18 x 13 mm / 0.71 x 0.51 in	20 x 17 mm / 0.79 x 0.67 in
Operation Mode	Fingerprint Only, Fingerprint + Card, Card Only	
Number of Fingerprints Stored	1,900 (for Fingerprint Only mode)	
Supported Card	ISO14443A MIFARE Class, 13.56 MHz	
Output	1 Port (240V, 2.5A)	
Power	DC 7.5V ~ 12V, Max 250mA	
Operating Temperature	0 ~ 50° C / 32 ~ 122° F	
Humidity	10% ~ 90%	
Dimensions (H x W x D)	130 x 54 x 43 mm / 5.12 x 2.13 x 1.69 in	130 x 54 x 38 mm / 5.12 x 2.13 x 1.50 in

Note:

1. For **Card + Fingerpring** mode, it is required to purcahse GeoVision's cards and tags to work with.
2. For data sychronization with GV-ASController and GV-ASManager through LAN, it only supports when the following controller firmware version and software version work together:
   - GV-ASManager: V4.0 or later
   - GV-AS100 / 110 / 120: V1.06 or later
   - GV-AS400: V1.04 or later
   - GV-AS210 / 810: V1.0 or later

Ordering Information

GV-GF1901	81-MF191-001
GV-GF1902	81-MF192-001
GV-GF1911	81-MF1911-001
GV-GF1912	81-MF1922-001
User Card	81-MA13560-F002
Tag	81-MK135-1F2
PC Service Package	E70-GFING-001