

# **SF100 User Manual**

**Version 1.0**

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# 1 Profile

## 1.1 Basic function parameters

### Features

Easy installation, high reliability

Simple and clear operation flow, voice prompts in the operations.

Support the ID / MF card, a wider use range.

Support the backup authentication, stronger function (also with the extension function).

### Basic function parameters are shown as follows:

Power	DC12V
Function	Access control device, has the detection functions such as door sensor, device dismantled etc.
	One Wiegand output (only SF101)
User number	200 (fingerprint, ID card and MF card)
Record memory	30000 records
communication	USB
	RS232/485 (device monitors the running)
Fingerprint head	Optical fingerprint head
Door bell	Support the wired doorbell
Speaker	The voice prompts
Buzzer	Alarm when the device is dismantled
LED	Three-color indicate (Red, green,

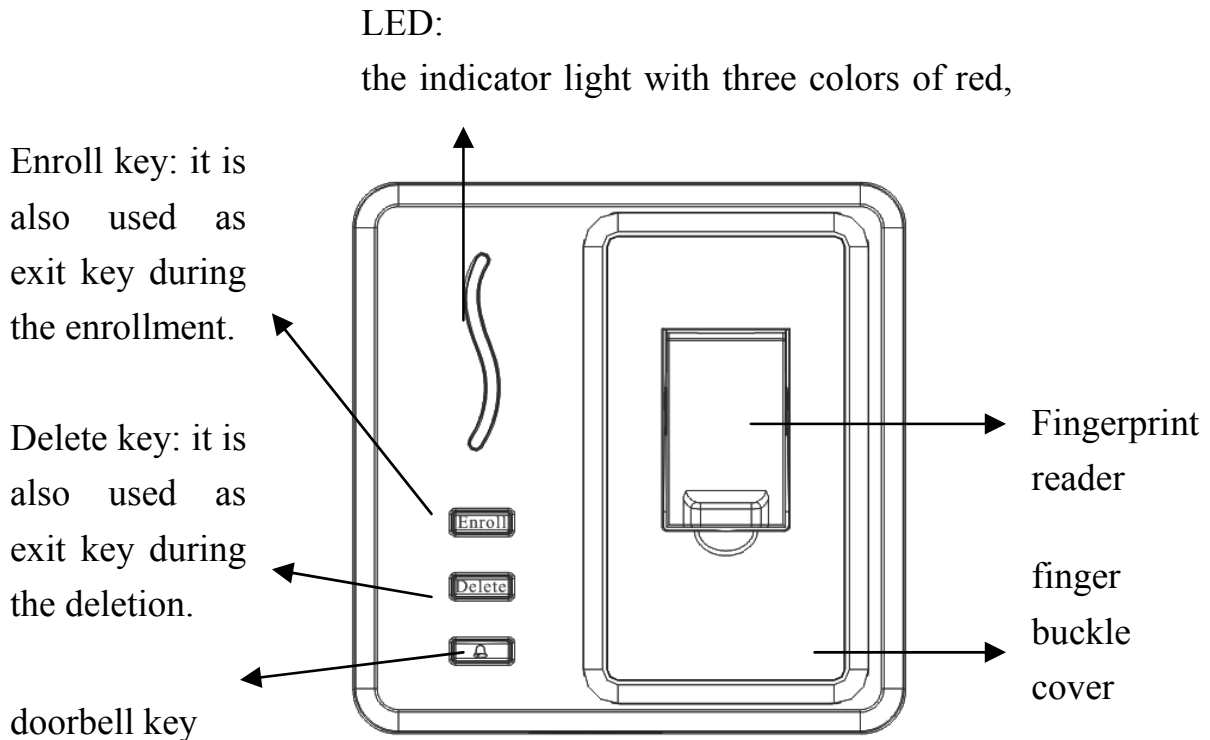
	blue)
Language	Support multi-national voices
Sleep	Support the sleep function

**Explanation:**

1. Access control function: support the access control output, door sensor alarm, exit button, but not support time segment, duress alarm etc. It is a comparatively simple access control.
2. Sleep function: during sleeping, the backlight of fingerprint head is turned off and Led displays, if any key is pressed (except the Bell key), it will be waked up automatically to work normally.

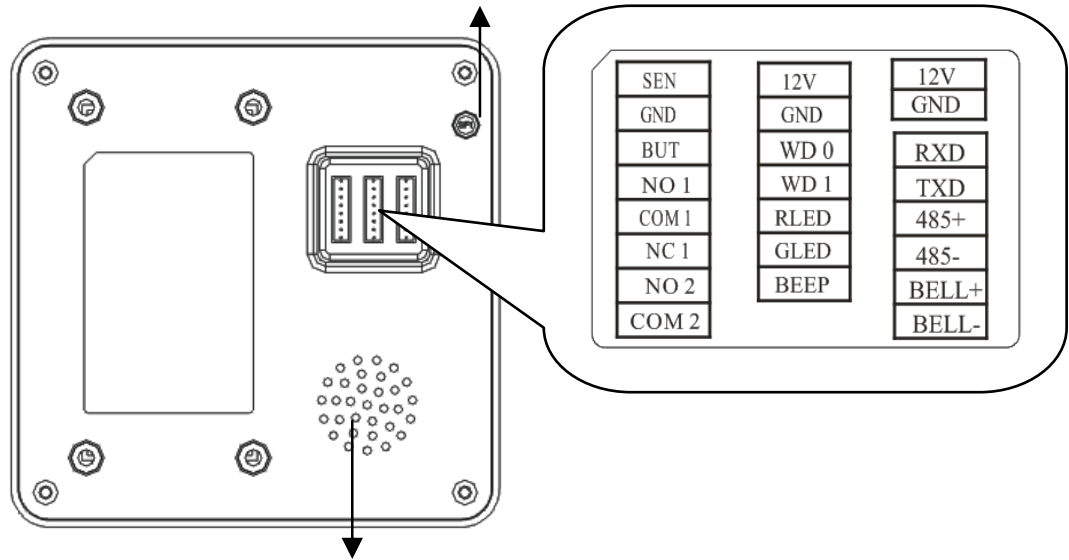
**1.2 Panel introduction**

**Front panel**



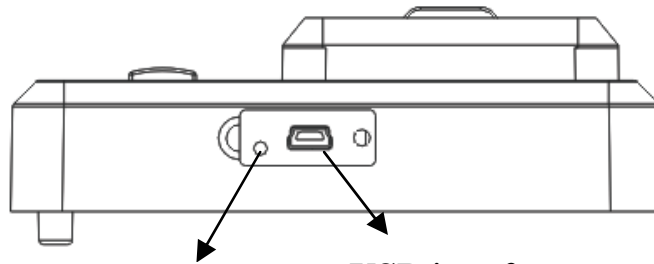
**Back panel:**

**Anti-dismantle button:** Send out the alarm signal through the terminal when the device



**Speaker** (mainly used in voice prompt)

**Bottom Panel**



**Reset key**

**USB interface**

Press this key to restart device if device can not run normally due to the error operations or other accidents.

## 2. System Installation

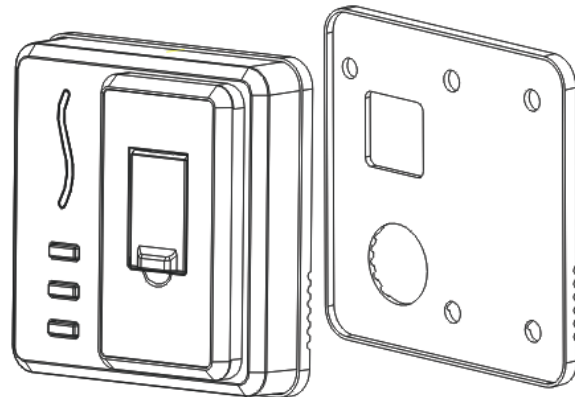
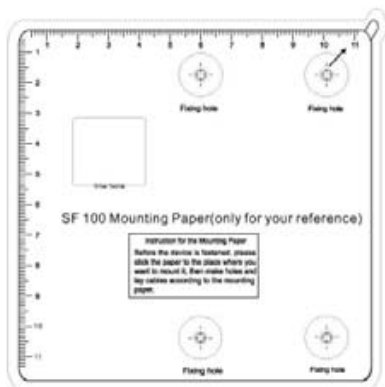
### 2.1 Installation Notices

Our products are mass-produced and in accordance with the strict production and testing standards in China, the United States and the European Union, but we hope you read the installation notices carefully before the installation. The company to remind you the proper use, will greatly improve your use effect and speed. **If you don't read the notes carefully before the installation, probably because of improper installation will cause a very serious accident damage**, even though we make every effort to provide you with good service, and you will have to pay an unnecessary price.

1. **Please connect the power supply later after all other wires are connected well.** If the machine cannot run normally, please cut off the power and then start examination. Please remember: All connection wires with power will damage the machine accidentally. We won't provide maintenance for such damage.
2. Recommend the use of 3A/12V DC power supply to the equipment. For details, consult the relevant technical staff.
3. **Please firstly read explanations of connection terminals carefully and then connect the wires in strict accordance with the rules, due to abnormal operations may result in equipment damages**, do not belong to the scope of warranty
4. **All external connection wires are forbidden to be bared**, both connections and useless ends of wires must be bandaged with insulating tape to prevent the accident contact of bared wires, which cause the machine damage.

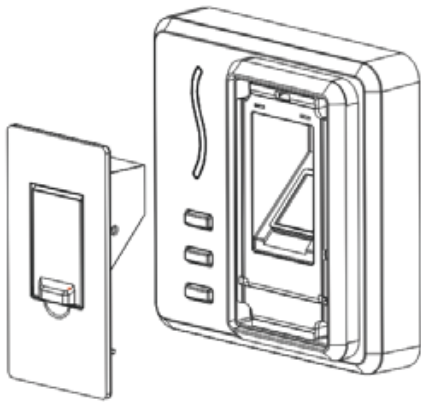
5. To prevent excessive instantaneous electrostatic damage to the machine in winter or the place with a comparatively serious static, **please connect the ground wire firstly**, then connect the other wires.
6. If the distance between power supply and machine is long, please don't use the net cable or other types of lines to take place of power cord. While selecting power cord, voltage attenuation caused by overlong transmission distance should be taken into account.
7. When **use 485 to organize a network**, please use the professional 485 bus and RS232/485 transformer with power, and adopt the bus-type wiring. If RS485 communication distance is over 300 meters, add a terminal matched resistor about  $120\Omega$  to the RS485 bus.
8. Please use the access control software to connect the machine and enroll users.

## 2.2 Device Installation

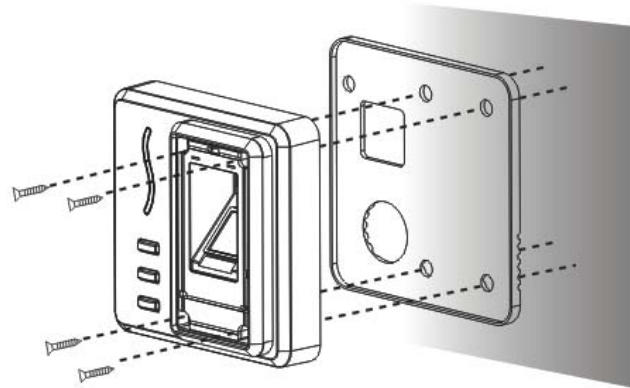


1) Post the moulding board on the wall. Drill holes according to marks on the moulding. (There should be screw holes and lead wire hole)

2) Take the waterproof glue away from the rear cover



3) Take the finger buckle cover away from the device



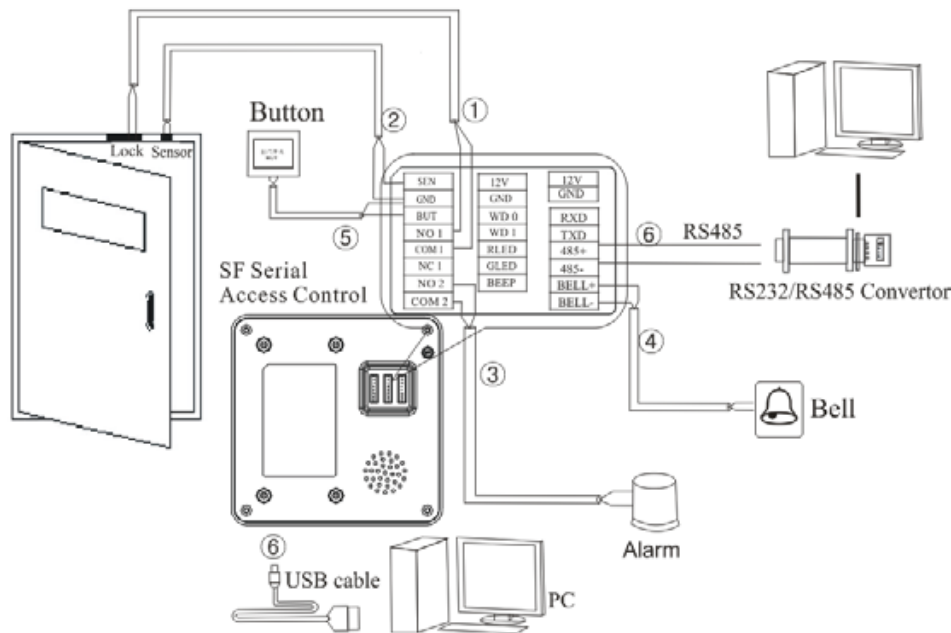
4) Use screws to fix the device and waterproof glue on the wall.



5) At last, install the finger buckle cover well to complete the device installation.



## 2.3 Sketch Map of System Installation



1. When a person has passed the status authentication on the access control device, the device will output the lock control signal to unlock.
2. Door sensor will automatically detect the switch state, when the door is accidentally opened or the door is not closed well, it will trigger the alarm signal (switch volume signal)
3. If the access control device is in unusual circumstances such as illegal demolition etc., it will output the alarm signal (switch volume signal).
4. External wired doorbell can be connected.
5. External exit button can be connected, so it is convenient to open the door from the indoors.
6. Through RS485/RS232/USB to connect with PC and transfer data to PC, you can easily manage multiple terminal devices through access control management software.

**Note:** The alarm and the wired doorbell are required to connect an external power supply

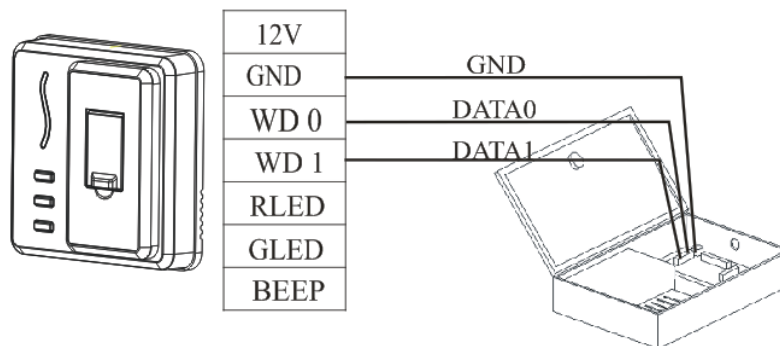
### 3. Connection with the peripheral devices

#### 3.1 Connection with access controller (only SF101)

SF100 as a fingerprint reader, can support various Wiegand format outputs, and can connect with access controllers of majority manufacturers on the market. Wiegand output has two modes as follows:

**The mode to output user number:** Wiegand outputs the fingerprint or the user number after a successful card authentication, or the instruction code after a failed authentication.

**The mode to output card:** Wiegand outputs the got card data, that is, to output the card data as the original.



**Note:** 1) The recommended distance between device and access controller should not be more than 90 meters (If a longer distance or an environment with interference, please use the Wiegand signal extender).

2) Regardless of whether the device shares power supply with the access controller, the device must share the ground with the access controller to guarantee the stability of Wiegand signal.

3) Since SF100 and SF101 can not be used as readers, RLED, GLED, BEEP are the idle terminals. In addition, SF100 has no Wiegand output, so 12V, GND, WD0 and WD1 are also the idle terminals.

### 3.2 Connection with door lock

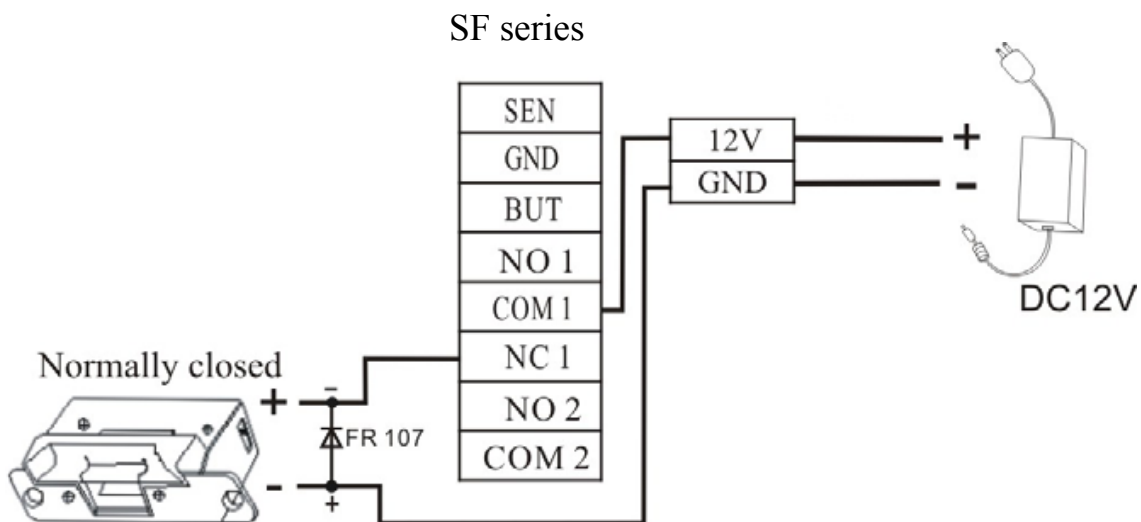
The device is able to support NO (normally open) and NC (normally closed) locks, only if connected with different terminals. NO terminal should be used for NO lock, which is open during power on and closed during power off. And NC terminal should be used for NC lock, which is closed during power on and opened during power off.

#### 1. Device and lock share power supply

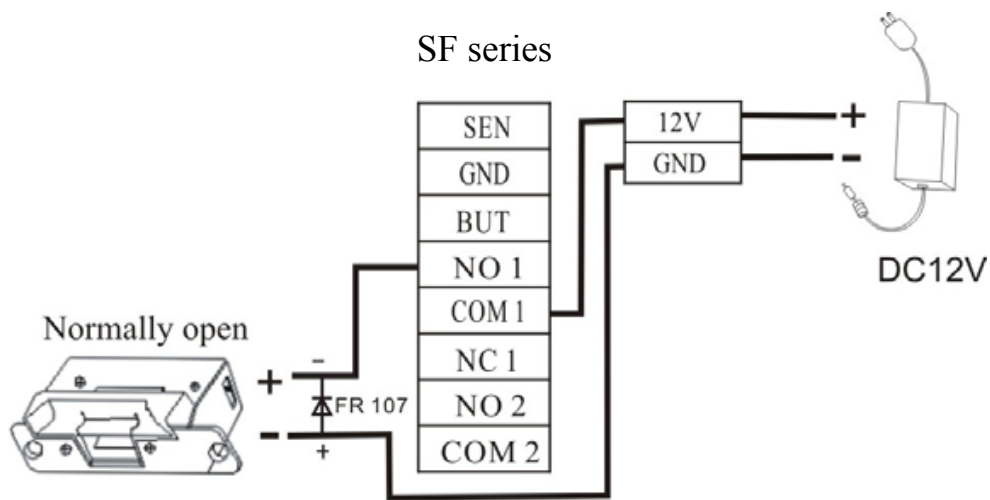
※Note: In case that device and lock share the power supply:

When  $U_{LOCK}=12V$ ,  $I-I_{LOCK}>1A$  ((thereinto,  $U_{LOCK}$  is the operate voltage of lock,  $I$  is the output current of device's power supply,  $I_{LOCK}$  is the operate current of lock.) And the distance between lock and device is closer.

##### (1) NC lock



(2) NO lock



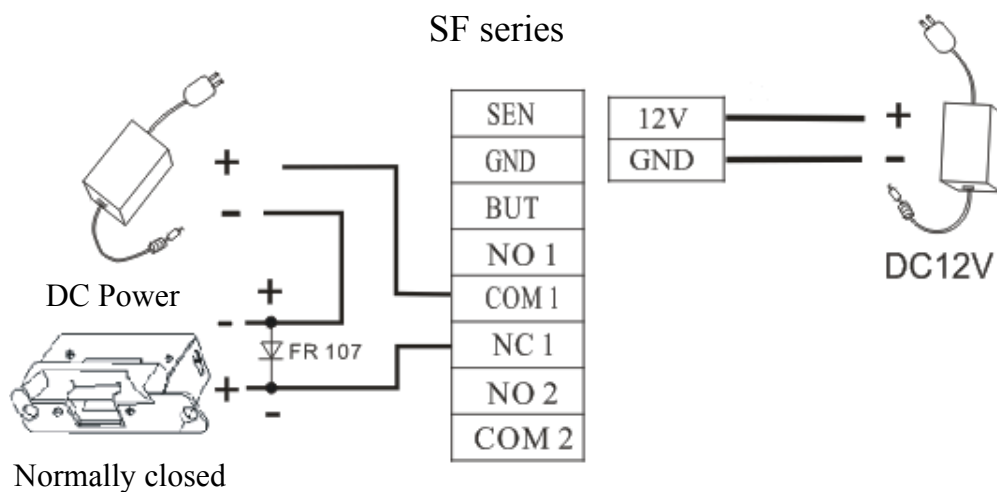
**2. Device and lock do not share power supply**

※Note: In case that device and lock don't share power supply:

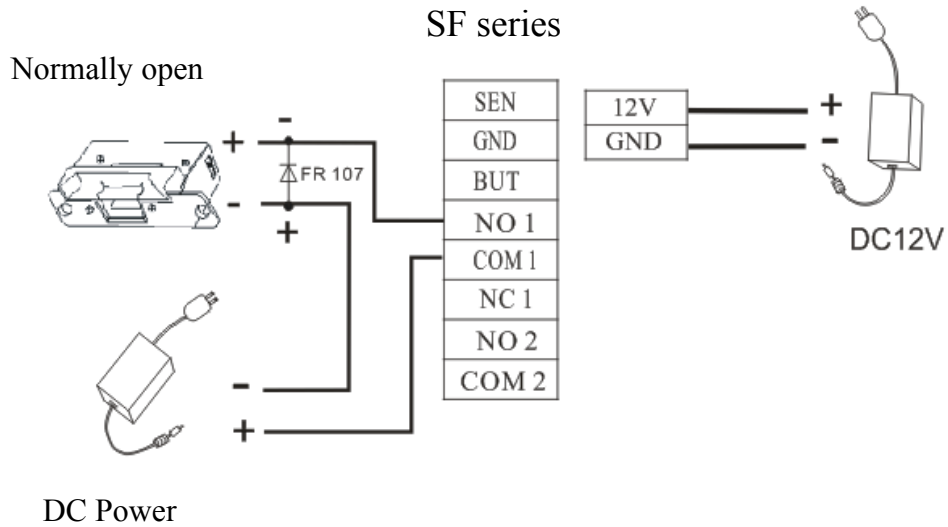
- 1)  $U_{LOCK}=12V$  and  $I-I_{LOCK} \leq 1A$ ;
- 2)  $U_{LOCK} \neq 12V$ ;
- 3) A long distance between device and lock.

(thereinto,  $U_{LOCK}$  is the operate voltage of lock,  $I$  is the output current of device's power supply,  $I_{LOCK}$  is the operate current of lock.)

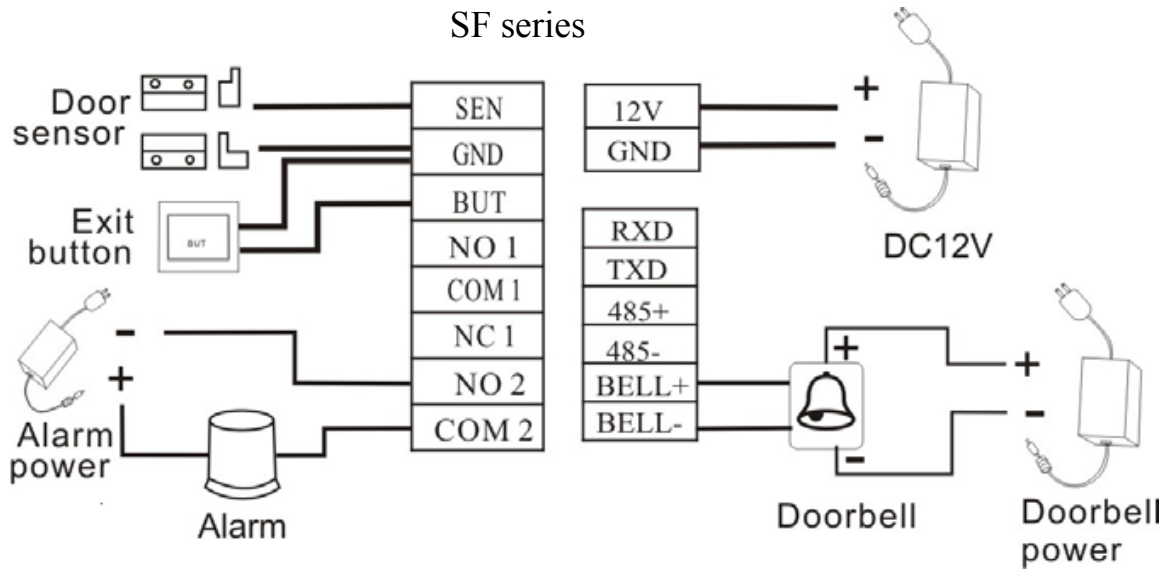
(1) NC lock



(2) NO lock



### 3.3 Connections with exit button, alarm, doorbell, and door sensor



### **3.3.1 Door sensor**

Door sensor is used to detect the door's on/off status. The fingerprint access control device can use it to detect the door is opened illegally, and at this time it will output the alarm. In addition, if the opened door is not closed well in the regulated time, it also will output the alarm

### **3.3.2 Exit button**

Exit button is a door-open switch installed inside the room and it is closed to open the door. Please fix it at a place which is about 1.4 meter high from the ground. Please ensure its location is positive and not askew, while its connection is accurate and firmly. (Cut off the bared side of unused cable and wrap it with the insulating tape.) Please pay attention to prevent the electromagnetic interference. (For example: lighting switch, computer, etc)

### **3.3.3 Alarm**

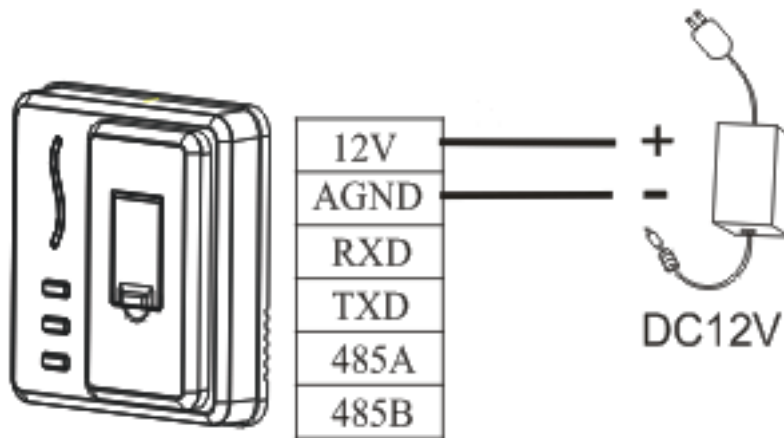
The alarm output of this fingerprint access control device is an on-off signal. It can be put in series to the power circuit of a simple alarm. Of course, it can also be used as a trigger signal of the advanced alarm or the monitoring system. (The alarm output of the device only supports the 12VDC alarm.)

### **3.3.4 Doorbell**

The device can only use the doorbell with control pin. The doorbell connected with power supply directly is not recommended.

### 3.4 Power supply

The device's working power is DC12V. The working current is less than 300mA and the standby current is less than 200mA. Connect the positive and negative poles of power supply between +12V and AGND directly to work normally. (**Don't connect the positive and negative poles in reverse.**)



## 4. Basic operations

When power on, the device is in authenticating state. At this time the user can enter into the states of user enrollment, administrator enrollment, delete a user, and empty users. Each process is prompted by the voice and the indicator light.

The operation processes are described as follows:

1. In authenticating state, if no enrolled fingerprint and card, the voice ‘Please press the Enroll key long to enroll a administrator’ prompts the user to enroll a administrator as soon as possible.
2. User must enroll at least one administrator firstly before the normal users can be enrolled.
3. During the enrollment, if no operation consecutively for n seconds (set by the user), duplicate the corresponding voice prompt. After two times consecutively voice prompts, system will return to the authenticating status automatically. In the deletion state, system will exit as soon as the first overtime
4. MF card can only support the same and simple functions of ID card such as the enrollment and the deletion.
5. During the enrollment or the deletion, if consecutively three times failed confirmations by the user, system will return to the authenticating state with the prompt voice ‘A failed administrator confirmation, system will return to the authenticating state’
6. During the enrollment or the deletion, if press the Enroll key or the

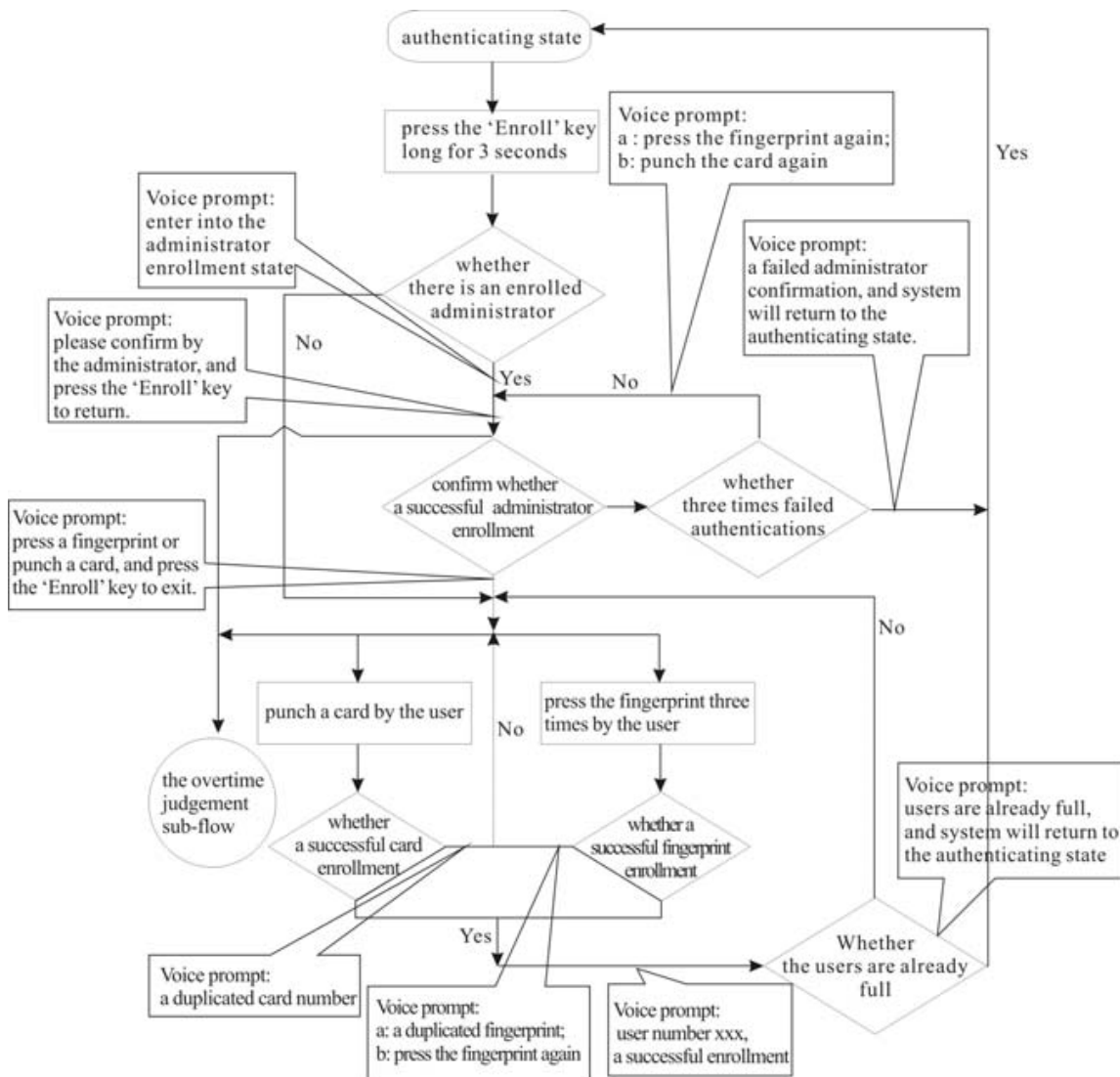


Delete key by the user, system will exit from the enrollment or the deletion state automatically, and there are voice prompts.

7. During deleting a user, the last administrator can not be deleted.
8. During deleting a user, the administrator confirmation is not required, but it is a must when delete all users.
9. When the enrolled fingerprints or cards are full, system will return to the authenticating state with the prompt voice 'Users are already full, system exits!'.
  - a: In authenticating (verification)state, blue LED will flash once per 1/2 second. During enrollment and deletion, no flashed LED displays.
  - b. If a successful authentication or enrollment or deletion, green led will be constant on for a second; If a failed authentication or enrollment or deletion, red LED will be constant on for a second.
  - c. When users open the door normally, 3 seconds after the lock is locked up, if the device detects the door sensor has not been closed well, the buzzer will work long to prompt; 1 minute later, if the door sensor is still not closed well, the alarm will work.

## 4.1 Enroll a administrator

The steps to enroll a administrator are shown in the following flow chart:

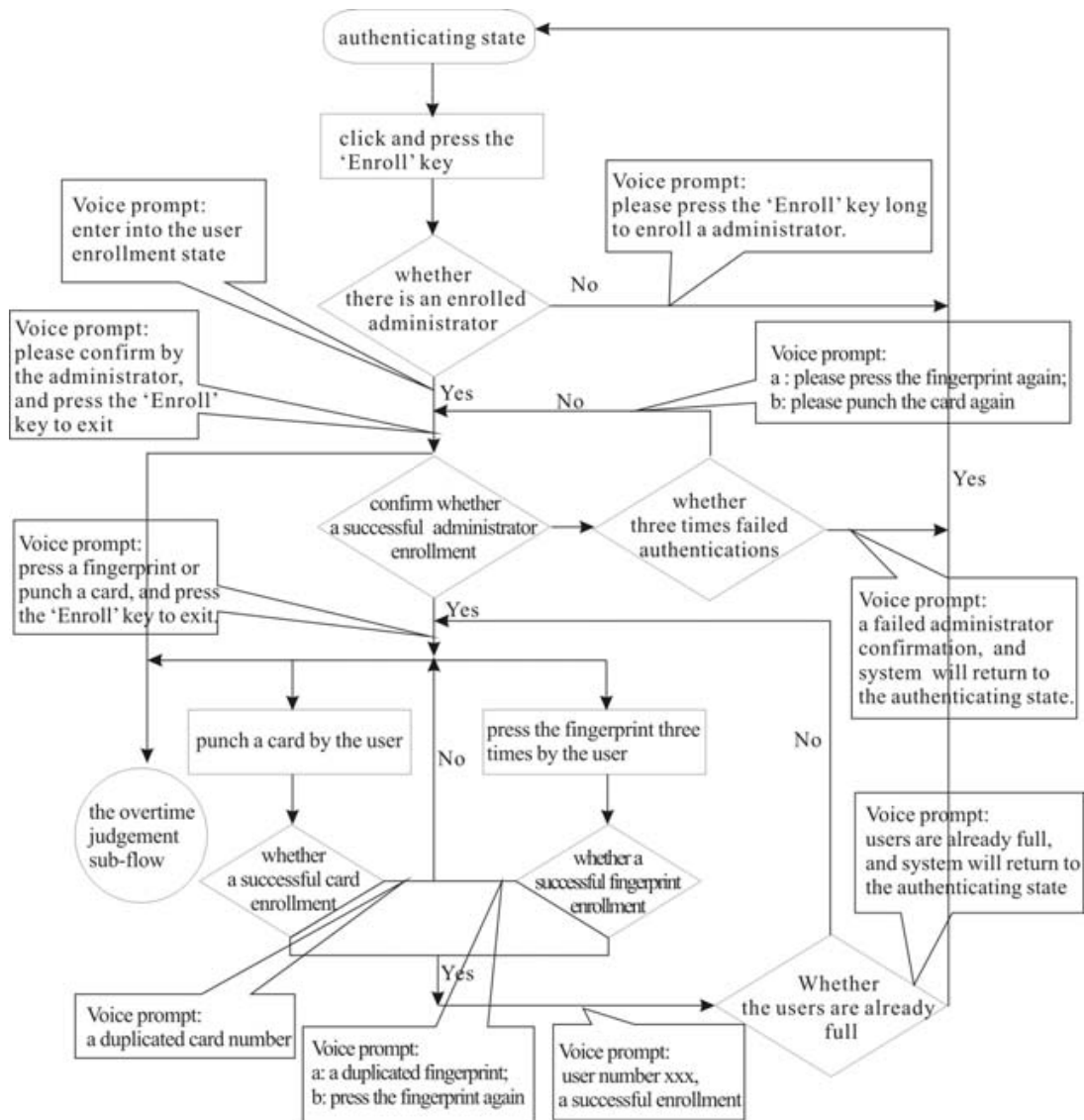


**Note:** The overtime judgement sub-flow and the fingerprint enrollment sub-flow, please refer to the section 4.6.

## 4.2 Enroll a user

Each user can only enroll a fingerprint or a card, the range of user ID is 1~999.

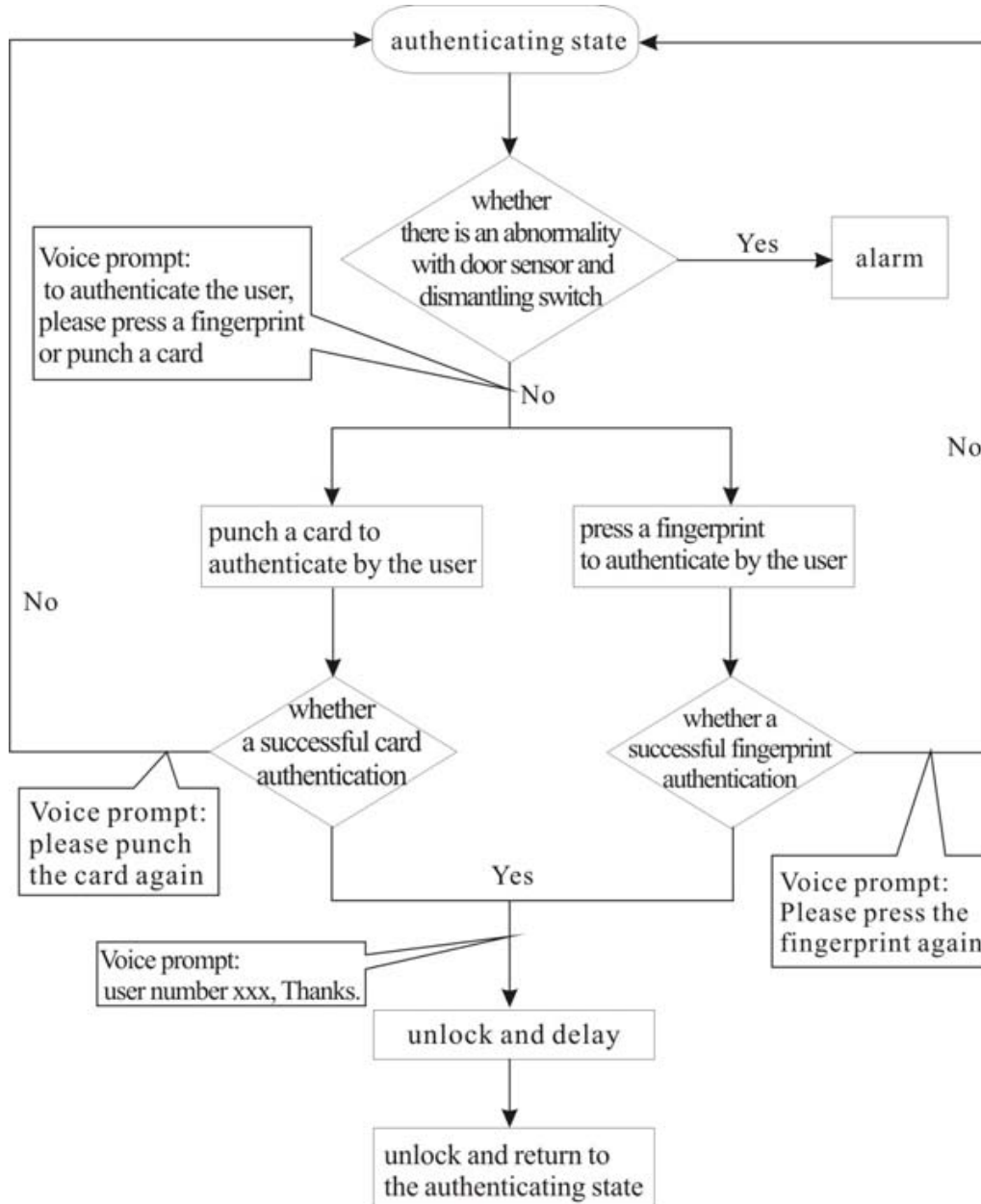
The operation steps are shown as the following flow chat.



**Note:** The overtime judgement sub-flow and the fingerprint enrollment sub-fow, please refer to the section 4.6.

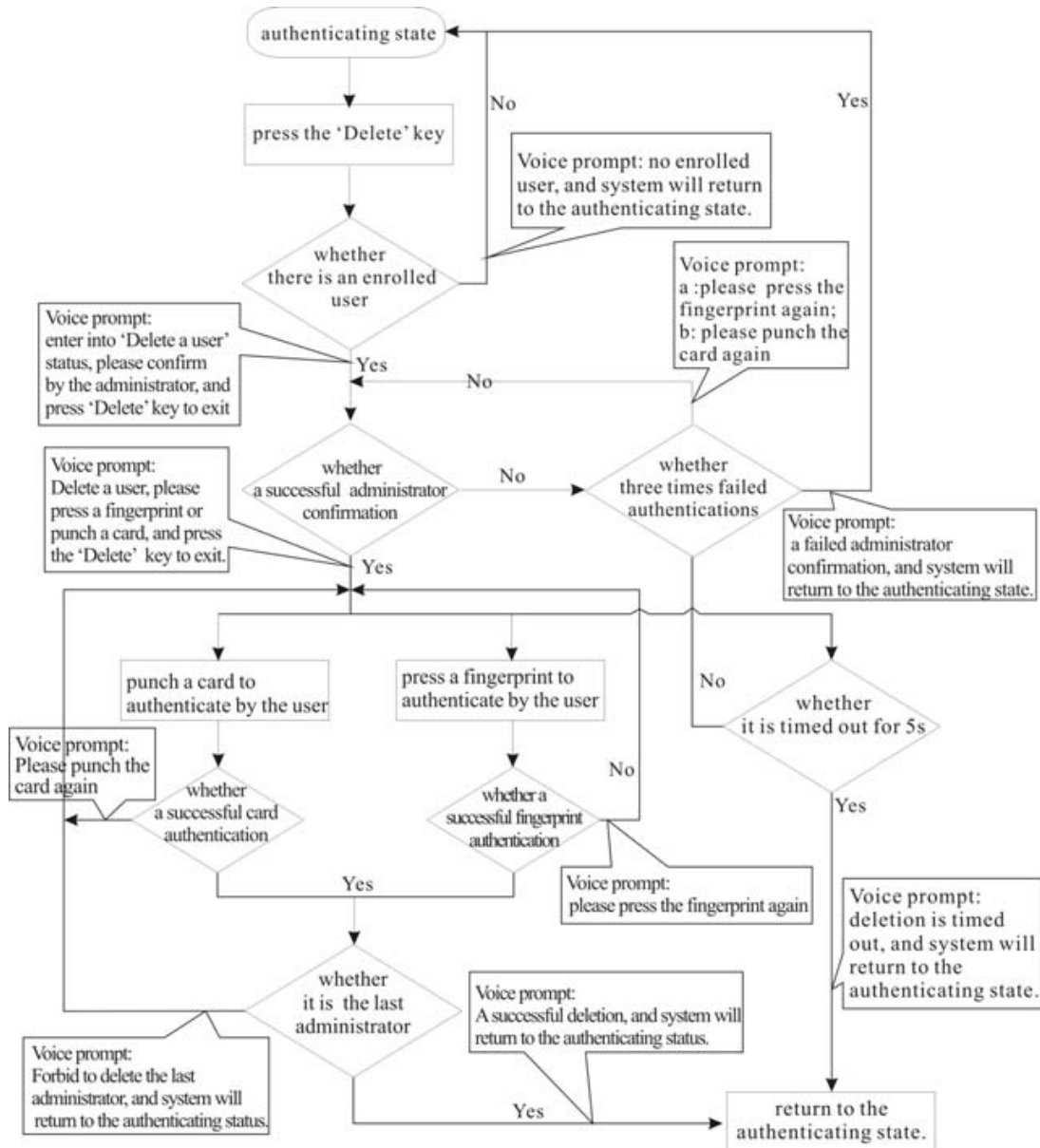
### 4.3 User authentication

The steps to authenticate users are shown as the following flow chart:



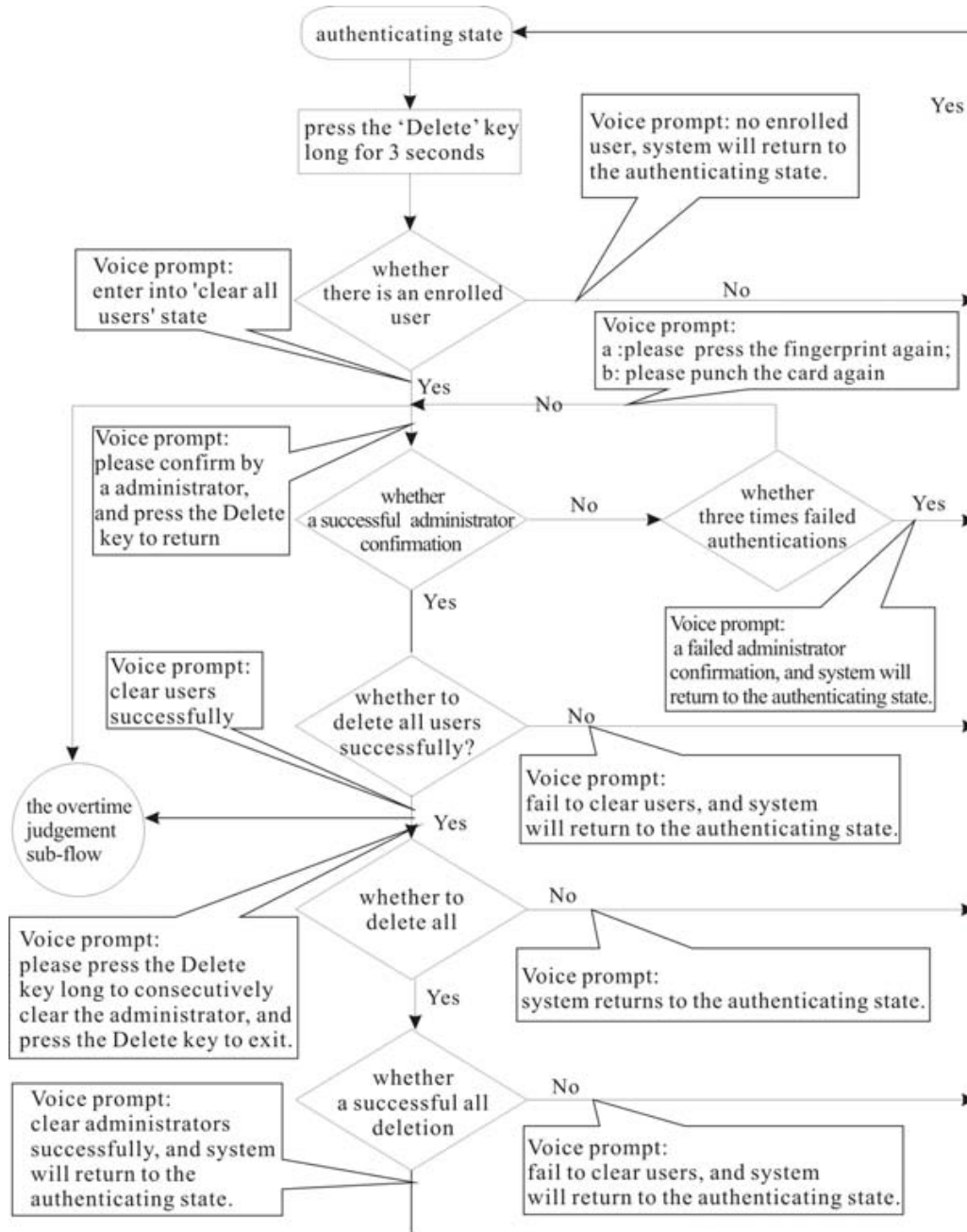
## 4.4 Delete a user

The operation steps are shown as the following flow chart:



## 4.5 Delete all users

The operate steps are shown as the following flow chart.

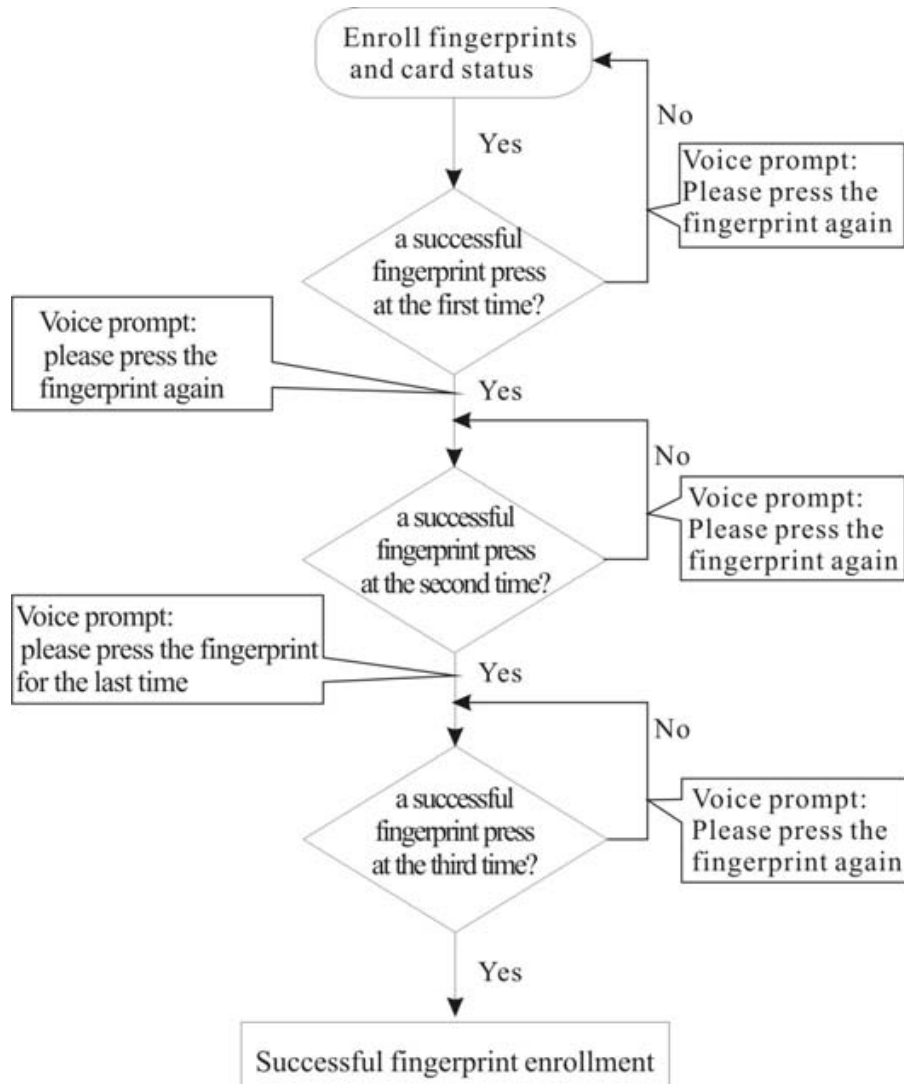


**Note:** The overtime judgement sub-flow, please refer to the section 4.6

## 4.6 Fingerprint enrollment sub-flow and overtime judgement sub-flow

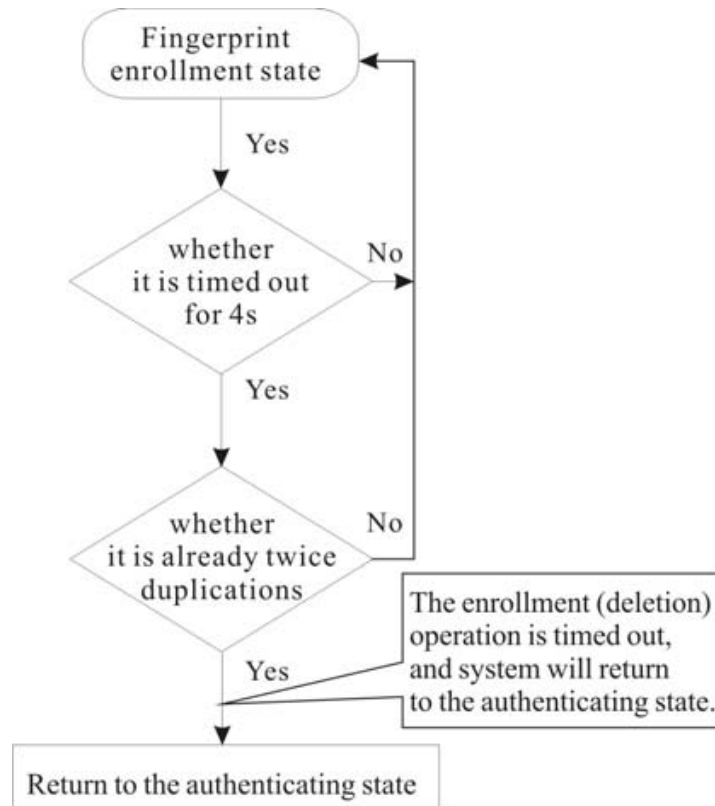
### 4.6.1 Fingerprint enrollment sub-flow

The operation steps are as the following flow chart.



#### 4.6.2 Overtime judgement flow when enrolling or deleting a user

The operation steps are shown as the following flow chart.

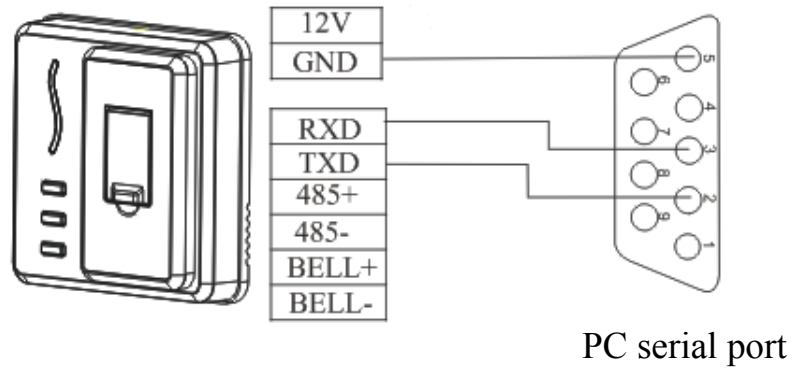




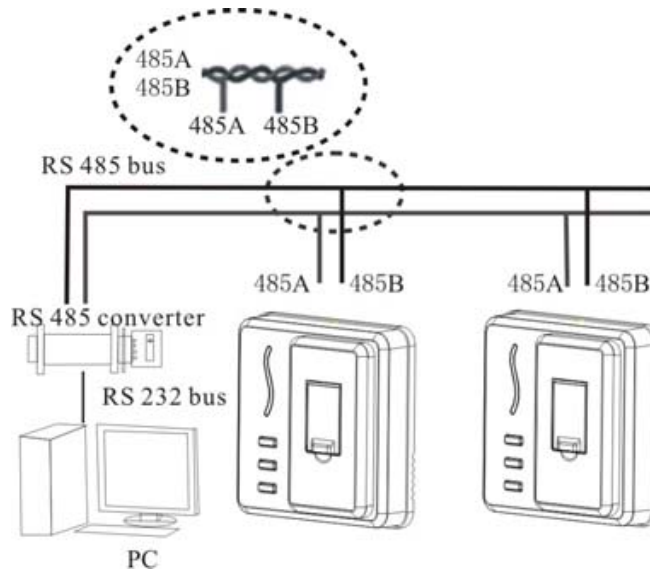
# 5. Communications

The background PC software can communicate with the device through three methods (RS232, RS485, USB), and then exchange the data. RS485 can also be used for the remote management.

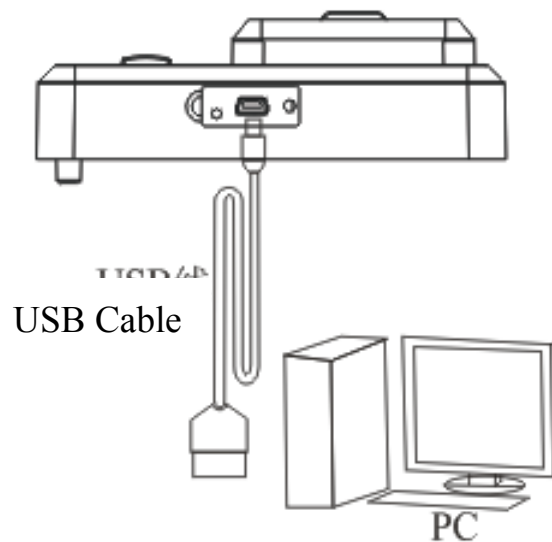
## 1. RS232 communication



## 2. RS485 communication



### 3. USB communication



After device is connected with PC well, do the operations as follows:

Upload the user's open door records

Upload and download the user information

Parameter setting, function configuration

Device monitors the running (only RS232/485)

The detail operation about data by the access control software, please refer to <<access control software manual>>.

## **Statement on Human Rights and Privacy**

Dear Customer:

First of all, Thank you for using the identification product designed and produced by us. As the world famous provider of leading identification technology, we attach great importance to the law involved in human rights and privacy in every county.

Therefore, we have the following statements:

1. Our civilian identification equipments only capture character points rather than images, not concerning in retaining privacy.
2. The captured character points cannot recover the original image, not involved in privacy.
3. We (as provider of equipments) have no direct or indirect legal liabilities for any negative consequences arising from using the equipment.
4. If you have dispute about human rights or privacy, please contact your employer.

Our other police equipment or development tools will provide function to capture citizens' original image. As for right infringement, please contact government or the equipment's ultimate provider. We have no any legal liabilities for it.

Notice: Chinese law provides citizen personal freedom rights, including the following:

1. The person is free from unlawful arrest, detention, search and infringement.
2. Personal dignity related with personal freedom is out of infringement.
3. Citizen's residence is inviolable.
4. Citizen's communication freedom and privacy are protected by law.

For password insecurity, people all over the world are suffering great

damages. The advanced identification technology will enter e-commerce, bank, insurance, law affair and other industries in the near future.

Identification in high-security environment ensures you real protection.

## Environmental protection



The environmental protection use period marked on our products is the safety period of our products used under the conditions specified by this manual without toxic and harmful substances leaking happened

The environmental protection use period marked on our products does not include the easy wear and tear components required to be replaced regularly such as the battery etc. The battery's environmental protection use period is 5 years.

### The toxic and harmful substances or element names and the content table

Part name	The toxic and harmful substances or elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr6 +)	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
SMD resistor	×	○	○	○	○	○
SMD capacitor	×	○	○	○	○	○
SMD inductance	×	○	○	○	○	○
SMD diode	×	○	○	○	○	○

ESD components	×	○	○	○	○	○
Buzzer	×	○	○	○	○	○
Adapter	×	○	○	○	○	○
Screw	○	○	○	×	○	○

○ : Indicate that the content of the toxic and harmful substance contained in all homogeneous materials of this part is in the limitation requirement stipulated in SJ / T 11363-2006.

× : Indicate the content of the toxic and harmful substance contained in at least one homogeneous material of this part is beyond the limitation requirement stipulated in SJ / T 11363-2006.

**Note:** The 80% product has adopted the manufacture with non-toxic and harmless environmental protection materials, the non-toxic and harmless substances or elements instead of the toxic and harmful substances or elements contained can not be achieved because of the current technology and economic constraints.