



Security Gate

User Manual

Xiamen Interactive Technology Co., Ltd.

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Thank you for your interest in the Intech smart library solution products. This manual provides information necessary to prepare installation and operation, which must be followed to ensure optimal performance. After reading, please keep it for future reference.

1. Notice Before Use

- ① There should not be strong mechanical driving equipment around the installation position of the RFID library gate, such as transformers and generators. These devices can generate noise and affect the normal performance of the antenna.
- ② Determine the independence of each gate and do not allow other cables to touch the gate, such as power lines, power supply lines and signal lines of other systems.
- ③ There must be no other equipment of the same frequency (13.56MHz) around the gate.
- ④ When plugging and unplugging the connection wires of the gate, you must turn off the power of the gate firstly. Please do not plug and unplug the terminal on the gate with power to avoid damage.

2. Product Overview

2.1 Introduction

Intech security gate adopts RFID technology and an excellent 3D read rate to help libraries protect materials from unintended removal or theft. If the secured items are checked out incorrectly, the light and sound alert will be triggered. It offers several different options for single or multiple entrances to blend into any library environment.

2.2 Specifications

- ① Operating Frequency: 13.56MHz
- ② Compatible Protocol: ISO18000-3/ISO15693
- ③ Passage Width: 100CM $\pm$ 3cm
- ④ Product Dimensions: 696*140*1679mm (L*W*H)
- ⑤ People Counting: support
- ⑥ Anti-theft Modes: EAS, AFI, DSFID, EAS+AFI
- ⑦ Speaker: 5W*2
- ⑧ Signal Linkage: Each panel of the security gate supports no less than 5-way digital signal linkage output, one of which can directly control the on and off of the 220V voltage
- ⑨ Firmware Upgrade: upgraded through software, no additional device needed
- ⑩ Communication Interface: Ethernet, RS232, RS485
- ⑪ Voice Prompts: support customized voice prompts, support MP3 format, and can configure voice files such as alarms and prompts

2.3 Key Features

- ① Alarm: various security compatibility, including EAS, AFI, EAS+AFI, AFI+DSFID
- ② Information Display: each safety gate provides the date, time, visitors, etc.
- ③ Excellent Detection System: highly effective 3D read rate ensures no false alarm and no omissive alarm on items
- ④ People Counter: a bi-directional patron counter can detect incoming and outgoing visitors, and save the data no matter of offline or power failure
- ⑤ Multiple Installation Options: It is available at multiple gate column options with fast installation
- ⑥ Status Indicator: Each panel of the gate has an independent RF status indicator to show the antenna's working status

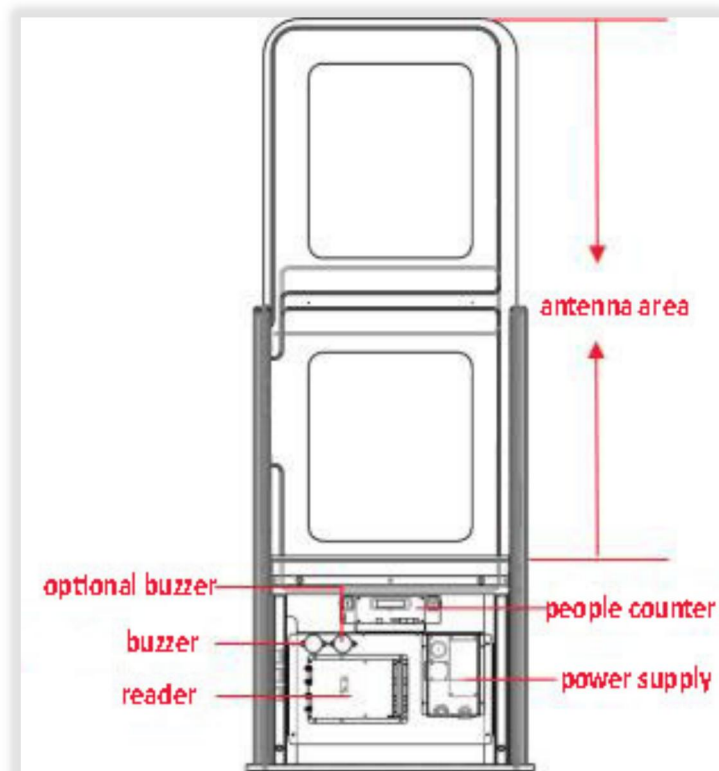
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- ⑦ Parameter Configuration: the gate connects to a computer via the Micro-USB interface, allowing for directly reading or modifying the security gate's configuration
 - ⑧ Self-check Function: The security gate has a power-on self-check function. If there is a fault, a voice prompt will be triggered.

NOTE:

- ① Dimensions are approximate. For specific dimension of a different model, please refer to the real object.
- ② As our products continue improving, technical parameters may be changed without prior notice.

2.4 Component

NOTE: The internal structure of the HF RFID security gate is basically the same. The following security gates are used as an example for explanation.



3. Configuration Instructions

3.1 Digital Tube Display

The digital tube display consists of 8 LED display tubes, which can display the flow of people entering and leaving the library, date and time. The above data can be exported or set through the software dashboard. The digital tube displays the corresponding data in the order shown below:



Digital tube display description:

- Visitor flow entering the library (1-0 0 0 0 0 0)
“1-” indicates the flow of people entering the library; the following six digits indicate the number of people entering the library.
- Visitor flow leaving the library (2-0 0 0 0 0 0)
“2-” indicates the flow of people leaving the library; the following six digits indicate the number of people leaving the library.
- Date (XX-XX-XX)
“XX” represents the year, month, and day data in turn.
- Time (XX.XX.XX)
“XX” represents the hour, minute and second data in turn.

4. Use PC Configuration Tool

4.1 Connecting Devices

After connecting the gate and the debugging computer with a network cable (**NOTE:** when directly connected, the debugging computer IP must be set to a static IP), open the “DevTool” software → enter the software settings interface → select [**Ethernet**] on the drop-down menu of [**Network Connections**] (**NOTE:** If the gate cannot be

found, select other communication interface.) → Click [**Discover**] to search for the online gates → choose a target serial number and double click it to modify the device configuration. (**NOTE:** If the TCP port is connected in the lower right corner of the setting interface, it means the gate is successfully connected. If the TCP port is not connected, please refer to Chapter 7 Software Debugging of this manual.)



4.2 Parameter Configuration

After the software successfully connects to the device, you can enter the topology information interface and the D0 channel interface to configure parameters, such as reading topology information, reading alarm parameters, and reading volume

information. The security gate's serial port address and the total number of security gate cascades are determined by the number of security gate panels. Please select the number of panels that you installed. The figure below shows a two-panel gate (one-aisle gate) as an example. Setting alarm parameters and D0 output parameters is explained in detail below. For the alarm volume of the gate, higher numbers indicate higher volume. The identifier indicates different audible alarm types.

NOTE: After changing configuration parameters, you should click the [Set] button to save it, otherwise, the settings will not take effect.

4.3 Linkage Mode

As shown in the figure below, the library security gate D0 channel has two categories and five types of basic output interfaces:

- MOS tube output

There are two terminals (+12V and MOS1). This output is a 12V power output. When in use, connect the positive pole of the load to +12V and the negative pole to MOS1.

- Relay output

Includes two photorelays, a signal relay and a power relay.

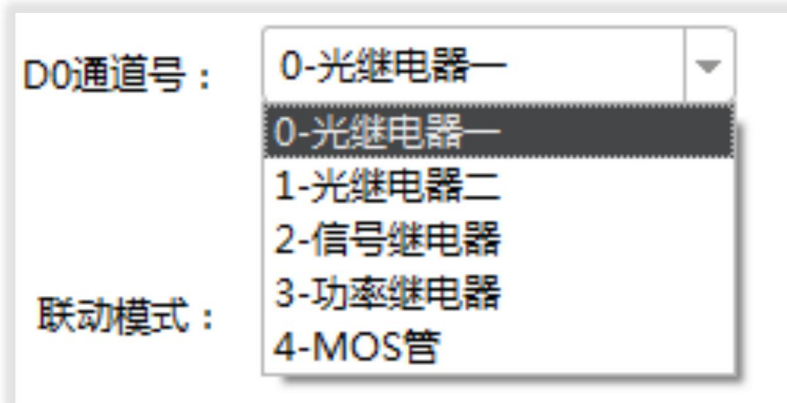
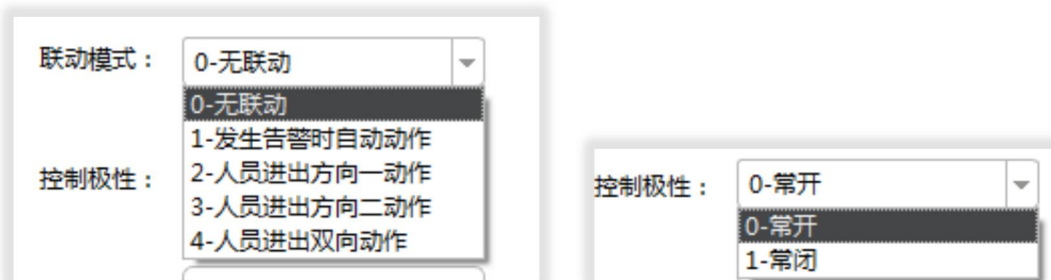


Table : Description of Output Configuration

Linkage mode type	● None: No linkage output when alarm occurs. ● Four types of alarm linkage actions: Alarm linkage output, when the alarm condition is met, the relay is triggered to activate.
Action pulse time	Relay activation time, in units of 200ms (time parameter can be set)
Relay	Control the electronic circuit switches
Min. interval time between actions	Interval time between multiple activation, in 100ms units (time parameters can be set)



4.4 System Time

You can get and set the system time that will be displayed on the digital tube. (**NOTE:** This function is only supported by the major gate.)



Set the system time	Synchronize the system time and date of the security gate with the local time.
Get system time	Get the device's system time and date.

4.5 Security Gate Information Retrieval

Enter the security gate information retrieval page, you can select different objects (such as main gate, slave gate) to view version information, obtain visitor flow, clear visitor flow, test alarm (detection sensitivity adjustment) and restart the target panel.

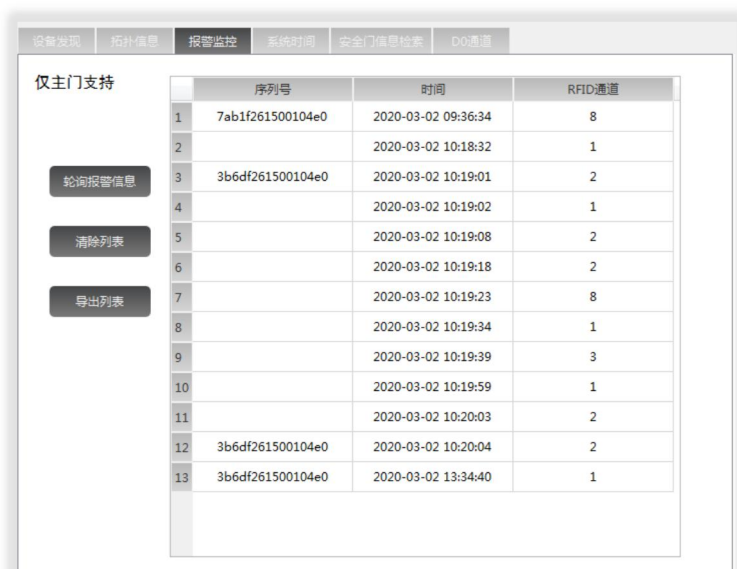


Get device information	Get the device reader information, including the hardware and firmware version and serial number
Get visitor flow	Get the number of visitor flow displayed on the people counter

Clear visitor flow	Clear the number of visitor flow displayed on the people counter of the currently connected security gate
Test alarm	Change the sensitivity of the alarm
Restart the target panel	Restart the device

4.6 Alarm Monitoring

The alarm monitoring interface can allow for obtaining real-time alarm records of the security gate. The record content includes the serial number of library items, the alarm time, and the RFID gate aisle. All data can be exported as an Excel document.
(NOTE: This function is only supported by the major gate.)



The screenshot shows a web interface with a top navigation bar containing tabs: 设备发现, 补充信息, 报警监控 (selected), 系统时间, 安全门信息检索, and DIO通道. Below the navigation bar, there is a section titled 仅主门支持. On the left side of this section, there are three buttons: 轮询报警信息, 清除列表, and 导出列表. The main area contains a table with the following data:

	序列号	时间	RFID通道
1	7ab1f261500104e0	2020-03-02 09:36:34	8
2		2020-03-02 10:18:32	1
3	3b6df261500104e0	2020-03-02 10:19:01	2
4		2020-03-02 10:19:02	1
5		2020-03-02 10:19:08	2
6		2020-03-02 10:19:18	2
7		2020-03-02 10:19:23	8
8		2020-03-02 10:19:34	1
9		2020-03-02 10:19:39	3
10		2020-03-02 10:19:59	1
11		2020-03-02 10:20:03	2
12	3b6df261500104e0	2020-03-02 10:20:04	2
13	3b6df261500104e0	2020-03-02 13:34:40	1

4.7 Alarm Mode

- ① Set the alarm detection mode to “Use tag EAS function” and choose the corresponding alarm option in the EAS parameter configuration:

The EAS function of the item tag should be enabled during detection, indicating that it is an unauthorized tag. At this time, when the tag passes through the security gate, it will trigger an alarm.

-
- ② Set the alarm detection mode to “Use tag AFI function”, set the AFI value in the AFI parameters configuration (e.g., set the AFI value to 01), and choose the corresponding alarm option:

During detection, if a tag with an AFI value set to 01 passes through the security gate, it will trigger an alarm, and the other tags will not trigger an alarm. (NOTE: If the AFI value of the security gate is set to 00, then all tags will trigger an alarm. Because 00 means no tag will be filtered.)

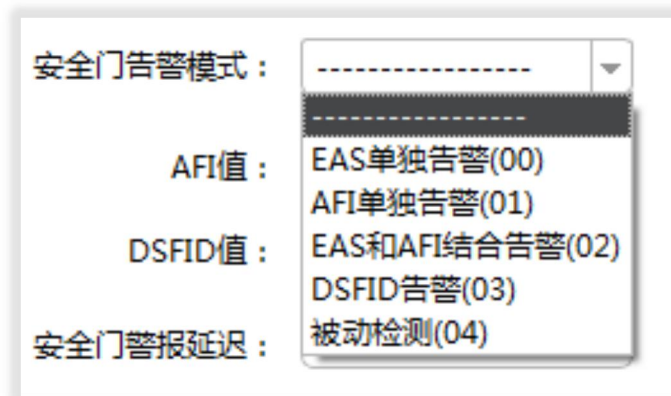
- ③ Set the alarm detection mode to “Use tag EAS + AFI function”, set the AFI value in the AFI parameters configuration, and choose the corresponding alarm option in the EAS and AFI parameter configuration:

Regarding the test method of EAS + AFI function, please refer to ① and ② above.

- ④ Set the alarm detection mode to “Use tag DSFID function”, set the DSFID value, and choose the corresponding alarm option:

During detection, if a tag with the same DSFID value as that of the security gate passes through the gate, it will trigger an alarm, and the other tags will not.

- ⑤ Passive detection



5. Alarm Detection Zone Test

Place an item with an RFID tag in a direction perpendicular to the center of the security gate. When it is detected normally, the vertical distance between the item and the external connection line of the major gate and slave gate antenna is about 35CM

while the distance of the item parallel to the gate is about 60CM, as shown below:



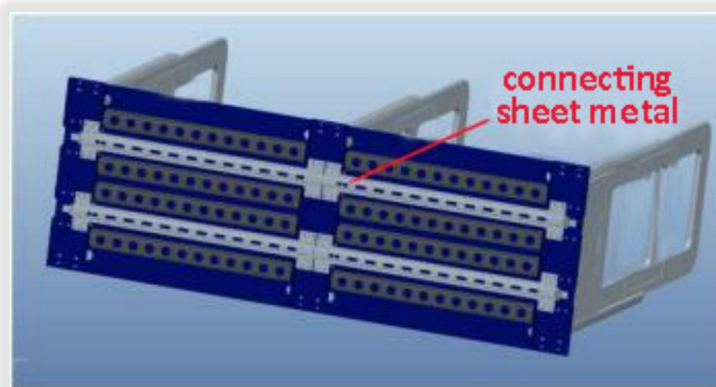
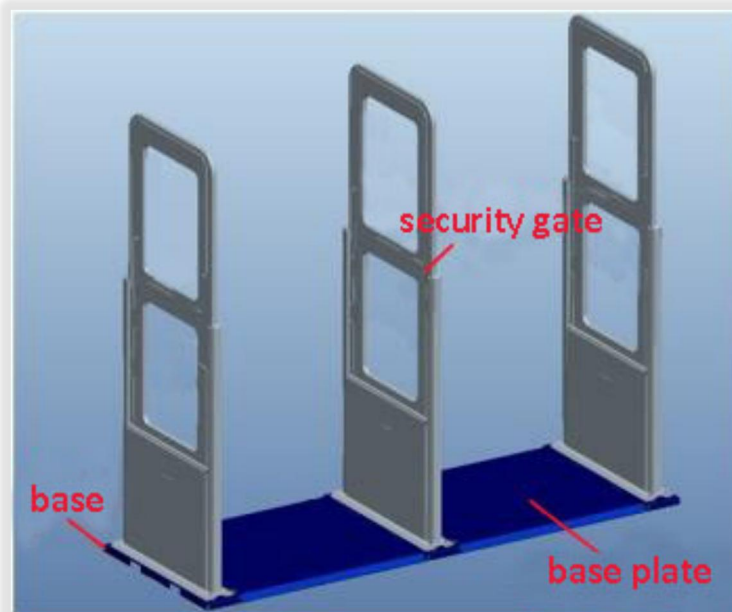
6. Security Gate Installation

Attention before installation:

- ① Do not place the security gate close to large metal objects when implementing, otherwise, it will change the antenna parameters and affect the device's running.
- ② There should not be strong mechanical driving equipment around the installation position of the RFID library gate, such as transformers and generators. These devices can generate noise and affect the normal performance of the antenna.
- ③ Determine the independence of each gate and do not allow other cables to touch the gate, such as power lines, power supply lines, and signal lines of other systems. There must be no other equipment of the same frequency (13.56MHz) around the gate.
- ④ Do not install the security gates of each system too close to each other (More than 3 meters is recommended). Each system can support up to ten panels of gates.

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- ⑤ When plugging and unplugging the connection wires of the gate, you must turn off the power of the gate firstly. Please do not plug and unplug the terminal and RS232 cable on the gate with power to avoid damage.
 - ⑥ Cable specifications: 220V AC power cable should be 3*1.0 square millimeter (or 1.0 or more) cable and must be grounded to ensure 220V.

The following images show the installation steps:



Step 1:

Place the connecting sheet metal at the bottom of the base, open the power box covers of the main and slave gates, and put them aside. (Take the slave gate as an example, which is also applicable to the main gate.)

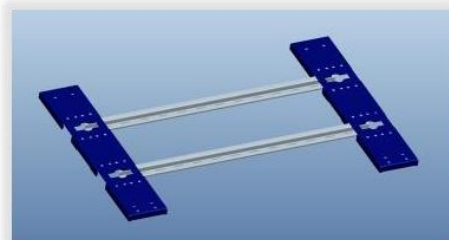
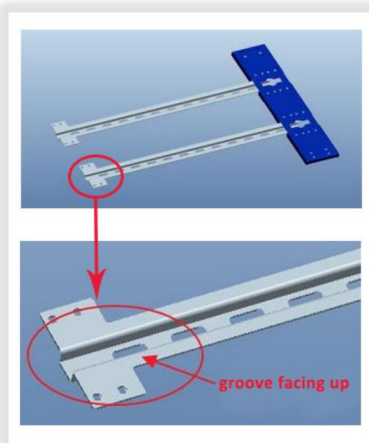


Deploy the communication cable originating from the main gate and the power cable destined for the slave gate by threading them through the access hole in the main gate baseplate, subsequently routing them along the connecting sheet metal raceway, and finally exiting via the access hole in the slave gate baseplate.

Conversely, the sensing coil antenna of the slave gate is to be routed from its baseplate, through the same connecting sheet metal raceway, and out from the access hole in the main gate base.

Note that both the network and power cables must be routed through the connecting sheet metal raceway prior to exiting the baseplate.

The final step involves securing the baseplates to the connecting sheet metal structure using the provided hex socket head cap screws.



Step 2:

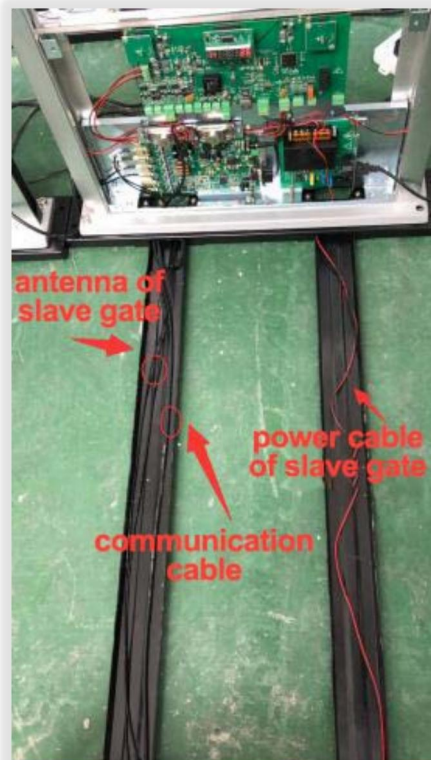
Place the gate panel on the base, ensuring that all the power covers of the gates face the same direction. Pass the wire that passed through the base in step 1

through the small hole at the bottom of the gate, and then fix the panel and the base with the hexagon socket screw.

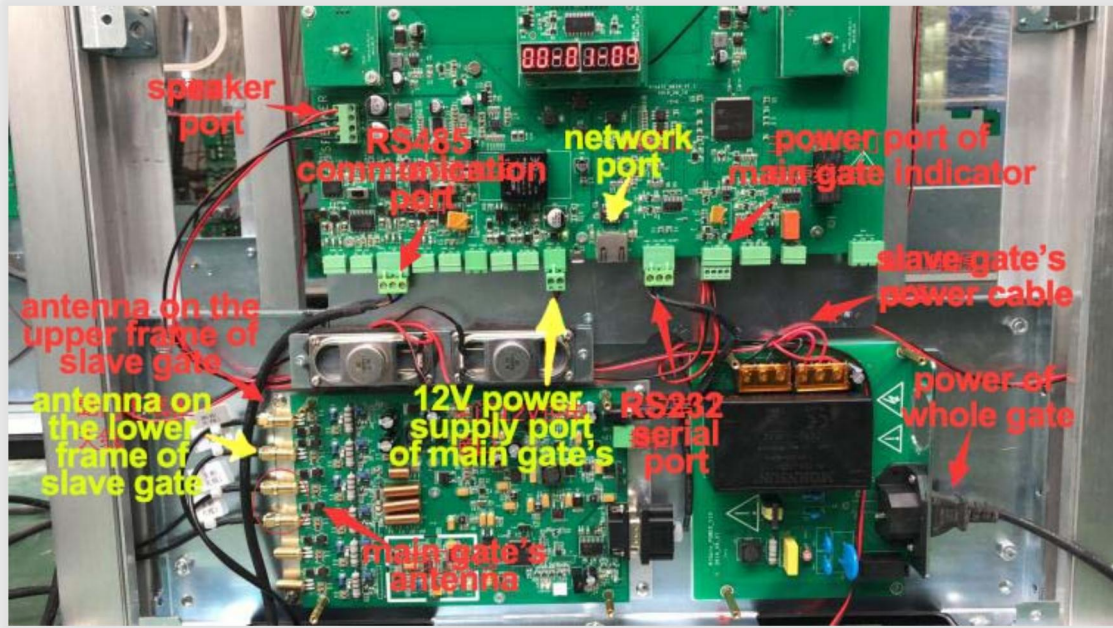


Step 3:

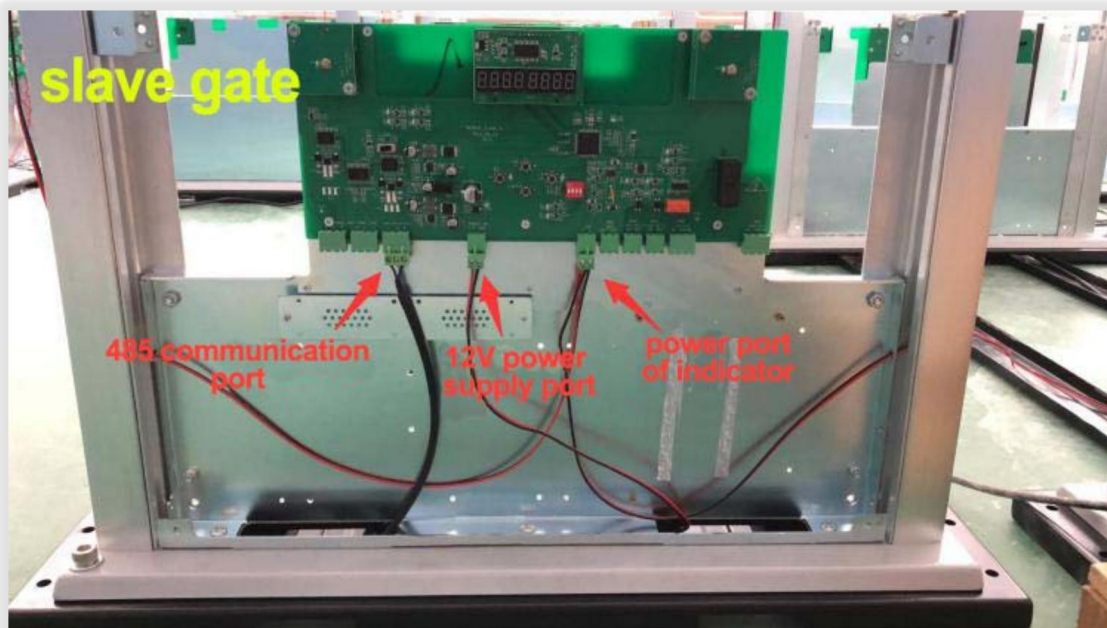
- ① The illustration of the slave gate's power cord, sensing coil antenna, and communication cable conduit (the main gate in the image below).



- ② The illustration for the cable connection of the main gate is shown below.
(NOTE: The network and power cable should be operated according to **Step 1.**)

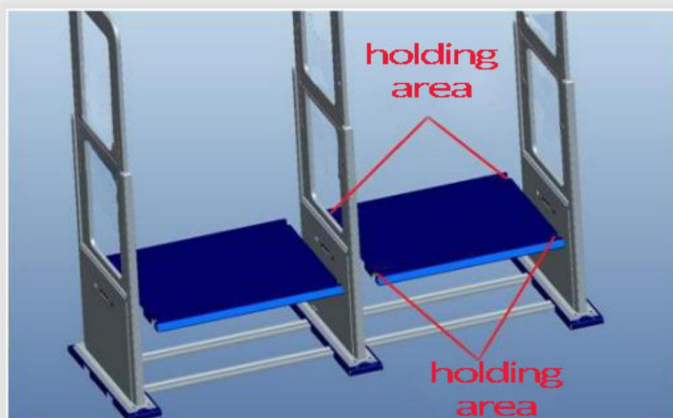
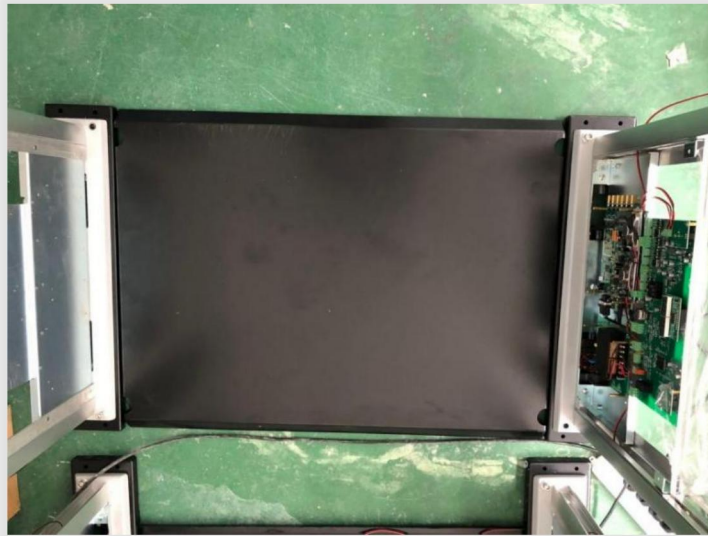


③ The illustration for the cable connection of the slave gates is shown below.



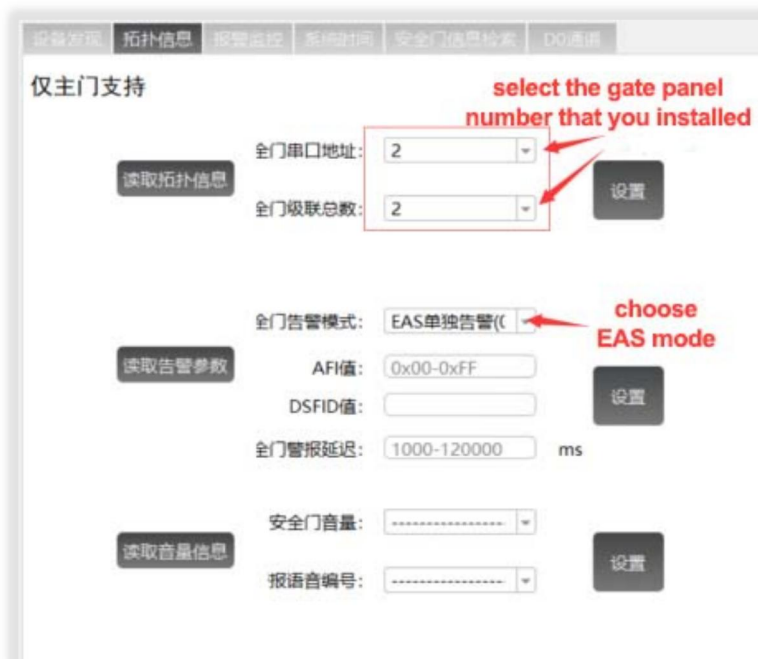
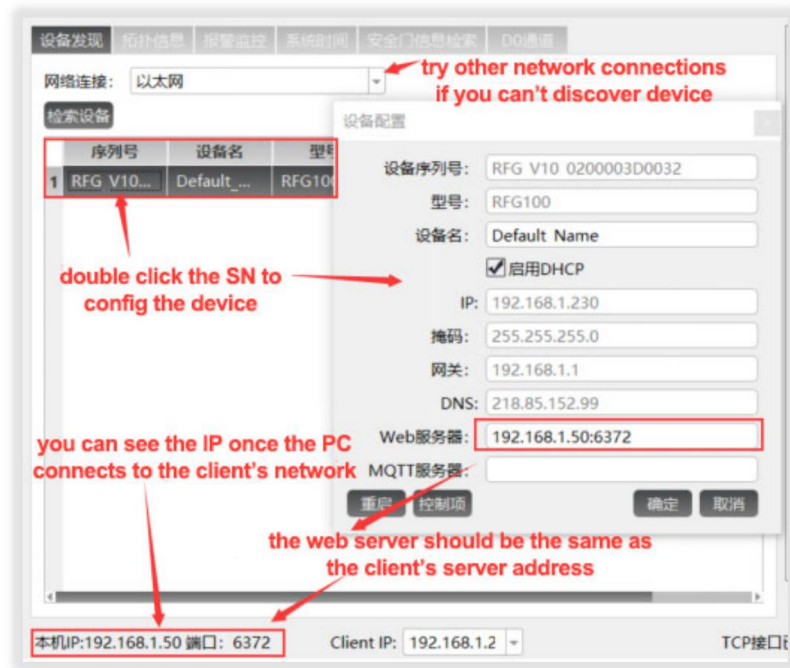
Step 4:

There are two grooves under the baseplate, which are two wireway. Cover the baseplate and power cover. (**NOTE:** Please hold the baseplate by the holding area on both sides for easy implementation.)



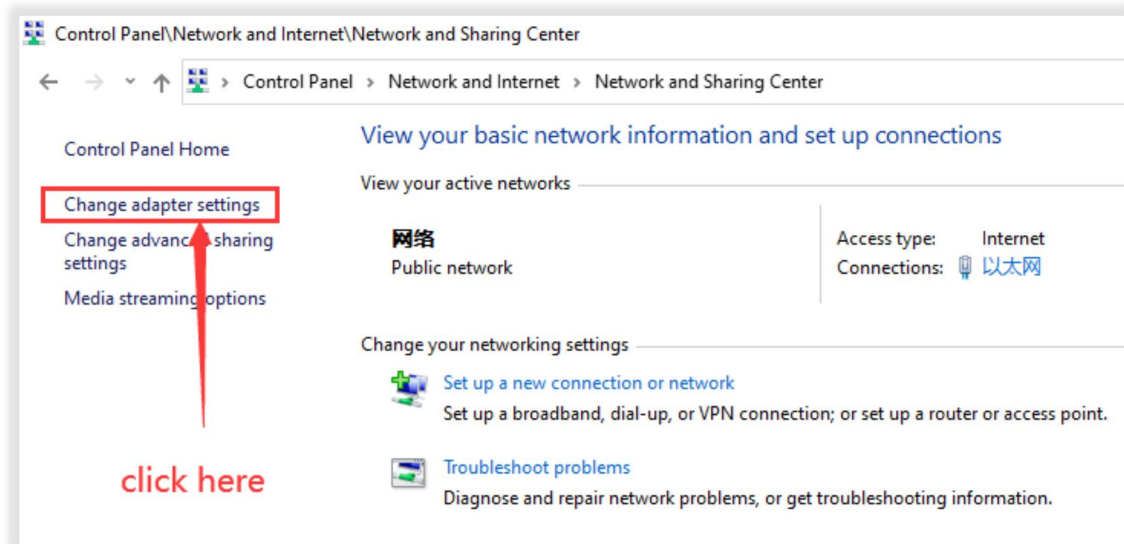
7. Software Debugging

After installation, using a network cable connect between the computer and router that has connected to the security gate. Open the “DevTool” software and follow the images below to configure the device. (**NOTE:** Regarding instructions on connecting devices, please refer to Charter 4.1 of this manual.)



Close the software after finishing the settings. (**NOTE:** If the TCP interface fails to connect, you need to manually set a static IP address.)

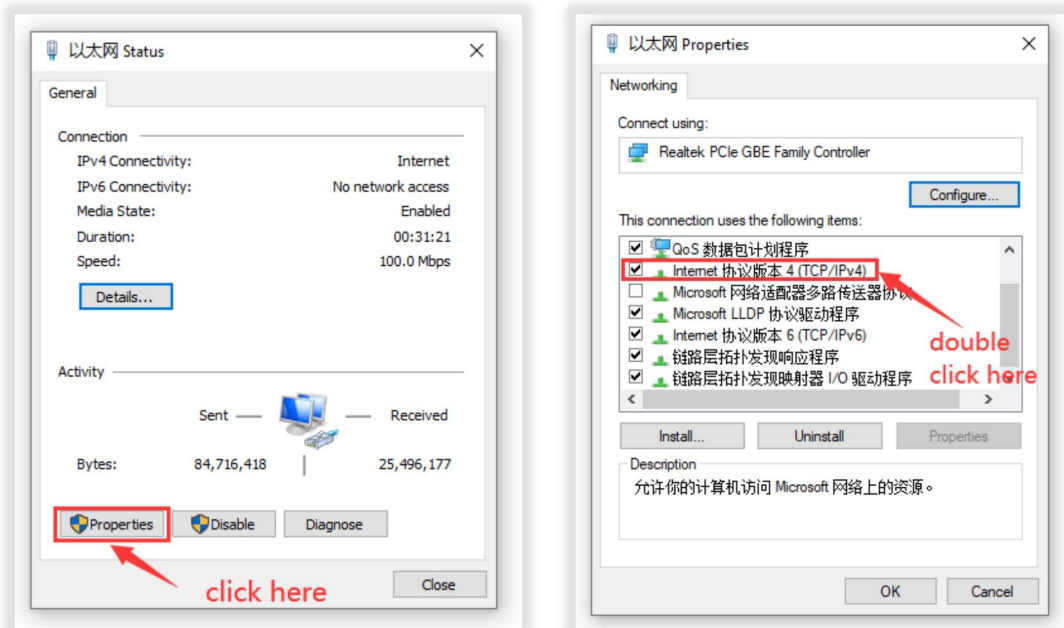
Open the [Network and Internet], and click [Network and Connections].



Double-click the network here that is the same as you chose on the [Discover Device] menu of the “Dev Tool” software.



Click [Properties], and double-click the [Internet Protocol Version 4 (TCP/IPv4)] as the following images show.



Finally, manually configure the IP address. Search the device again after the configuration is done, and the TCP interface will be successfully connected.



8. Troubleshooting

Under normal use, gates can generally work normally for a long period of time, and there are few system failures due to component failure. Most of the failures are caused by improper use, poor contact of power sockets, excessive AC voltage fluctuations, loose connection connectors, interference from surrounding electrical equipment and certain radio waves, and interference from equipment such as wires, coils, and metal frames. It needs to analyze the cause of the failure carefully, then eliminate them one by one. Until the cause of the failure is identified, the system settings and parameters cannot be changed arbitrarily, as the equipment's configuration is already optimized upon shipment from the factory. In the absence of relevant instruments, the random debugging leads to difficult judgment and elimination of the failure.

When the device cannot work normally, such as the reduction of detection sensitivity, no alarm, or frequent false alarms, etc. Please follow the instructions below to check:

(1) Check if the power supply is working properly.

When you find that the system is not working properly, you should check if the system's power is normal or not:

- Whether the input power voltage is correct
- Check for open or short circuits in the power wiring
- Check if the external power adapter is working properly
- Whether the power socket is firmly connected, and the input voltage fluctuates too much

(2) System detection sensitivity decreases.

In general, the system detection sensitivity is rarely reduced due to component failure. Most of the faults that cause the detection sensitivity of the system to decrease are caused by mutual interference and suppression between the systems, and interference caused by metal objects or electrical equipment near the detection antenna. Take measures to remove metal objects and electrical equipment near the device, and keep

them as far away from the equipment as possible. If you cannot get the device away from the interference source, you need to put a magnetic ring on the interference source until the device works normally.

(3) The system does not alarm.

When detecting the label, if the alarm light is not flashing or there is no alarm sound, the following operations can be performed for troubleshooting:

- Check if the antenna wiring port is loose or detached
- Check if the alarm light and buzzer are well connected, and the alarm light and buzzer are damaged
- Check if there is an RFID label inside the item, or try a few more items

(4) Always keep alarming when booting

Check whether there are tagged items around the gates, such as on the surrounding work station, drawers or cabinets of the work station, trolleys, and bookshelves. It can be tested by moving the gates away from the above objects. If the gates work normally after moving, you need to check the above objects.

(5) False alarm

- Check if there are RFID tags or items attached to RFID tags, large metal objects, etc., within 100CM around the security gate, also check the partition walls.
 - ① Are there items within 5 meters of the 220V power cord?
 - ② It is difficult to determine the cross-detection of the network cable. Take the network cable away and keep it 1 meter away from the gate.
- Another common cause of the gate's false alarm is the tags within the detection range of the device. It is recommended not to place RFID tags within 1.5 meters of the device. In particular, there must be no tags near the power cord of the device.

(6) The infrared people counter does not count.

The infrared holes of the aisle are not aligned.

There may be light interference. Please turn off the lights above and around the gates to try it out, because the infrared counter uses infrared data transmission. If there is light interference, the receiving circuit will not be able to decode correctly and will not count.

FCC Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.