

I. RFID Manager Connection

This demonstration program is mainly used for the function demonstration and performance test of the reader, as well as the example code of Module API.dll, while supporting network port and serial port communication.

1. Main Interface of the Program

Open the RFID Manager program, and its operation interface is shown in Figure 1:

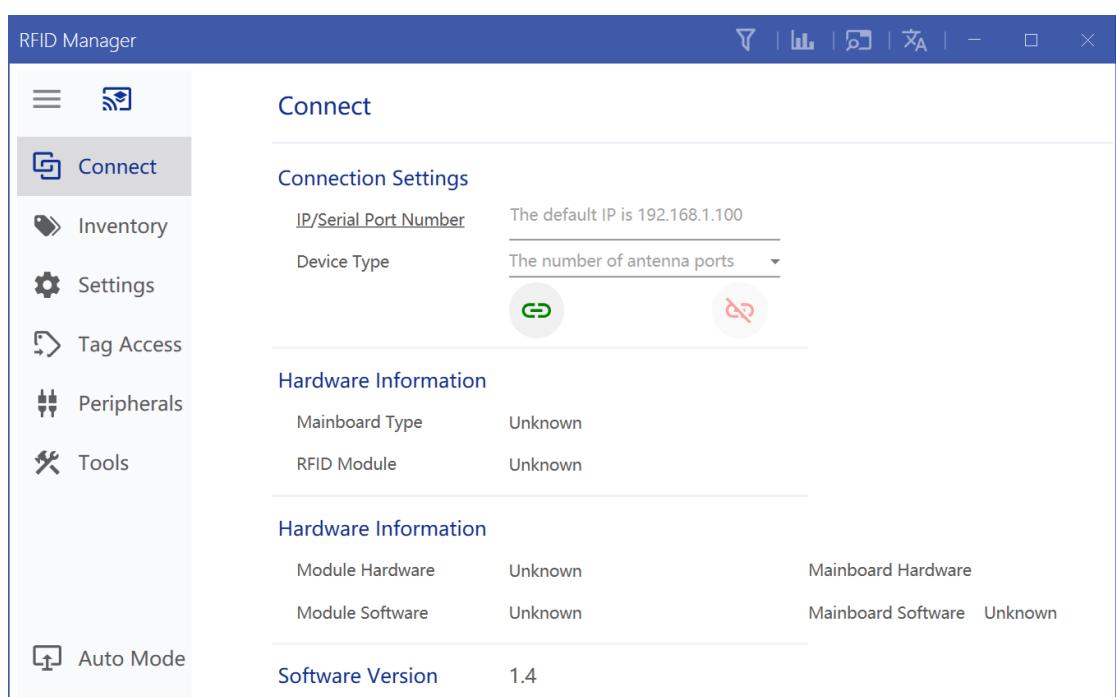


Figure 1

The function menu in the upper right corner of the picture includes ‘Label Filtering’, ‘Count Statistics’, ‘Command Debugging’, ‘Language Switching’, ‘Minimize’, ‘Maximize’, and ‘Turn Off’ respectively.

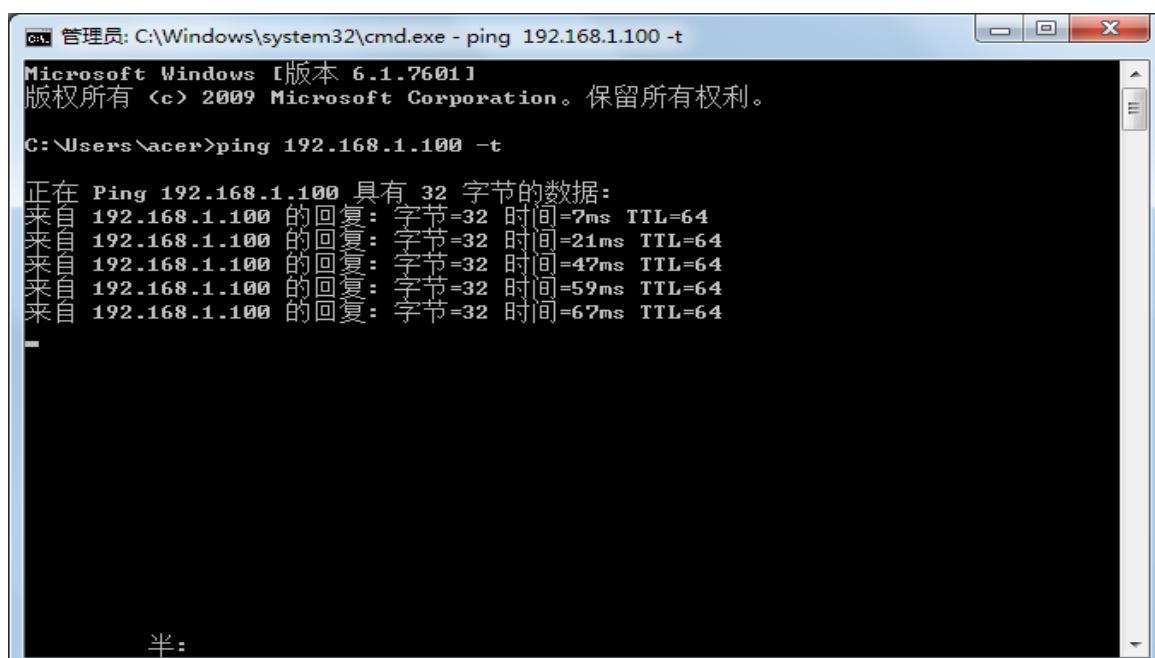
2. Reader Connection

2.1 Network Port Connection

In a network port connection, the default address of the reader is 192.168.1.100, the default gateway is 192.168.1.254, the sub-net mask is 255.255.255.0, and the IP address of the computer connected to the reader must be in the same network segment as the IP address of the reader. Set up correctly after the computer IP address,

the system 'start run' enter CMD command, enter the command interface, input ping 192.168.1.100 -t check whether the network physical connection is unobstructed. Check the connection flow can be so join operations. (If not, please find the device reset button and press 4 seconds, the status light changes color indicates successful reset, or not, enter arp -d in the CMD command interface, clear the MAC address list and check whether it is smooth).

Check the network port connection is smooth, as shown in Figure 2:



```
管理员: C:\Windows\system32\cmd.exe - ping 192.168.1.100 -t
Microsoft Windows [版本 6.1.7601]
版权所有 © 2009 Microsoft Corporation。保留所有权利。
C:\Users\acer>ping 192.168.1.100 -t
正在 Ping 192.168.1.100 具有 32 字节的数据:
来自 192.168.1.100 的回复: 字节 = 32 时间 = 7ms TTL=64
来自 192.168.1.100 的回复: 字节 = 32 时间 = 21ms TTL=64
来自 192.168.1.100 的回复: 字节 = 32 时间 = 47ms TTL=64
来自 192.168.1.100 的回复: 字节 = 32 时间 = 59ms TTL=64
来自 192.168.1.100 的回复: 字节 = 32 时间 = 67ms TTL=64
```

Figure 2

After confirming that the IP address of the reader and the computer are in the same network segment, click the default IP address 192.168.1.100 in the RFID Manager program, and then select the corresponding antenna port. The number of antenna ports is determined by the number of antenna ports supported by the reader rather than several antennas.

After the address and the number of antenna ports are selected, click the green 'Connect reader' button to realize the connection. After the reader is correctly connected, you can see the relevant information of the device. Figure 3:

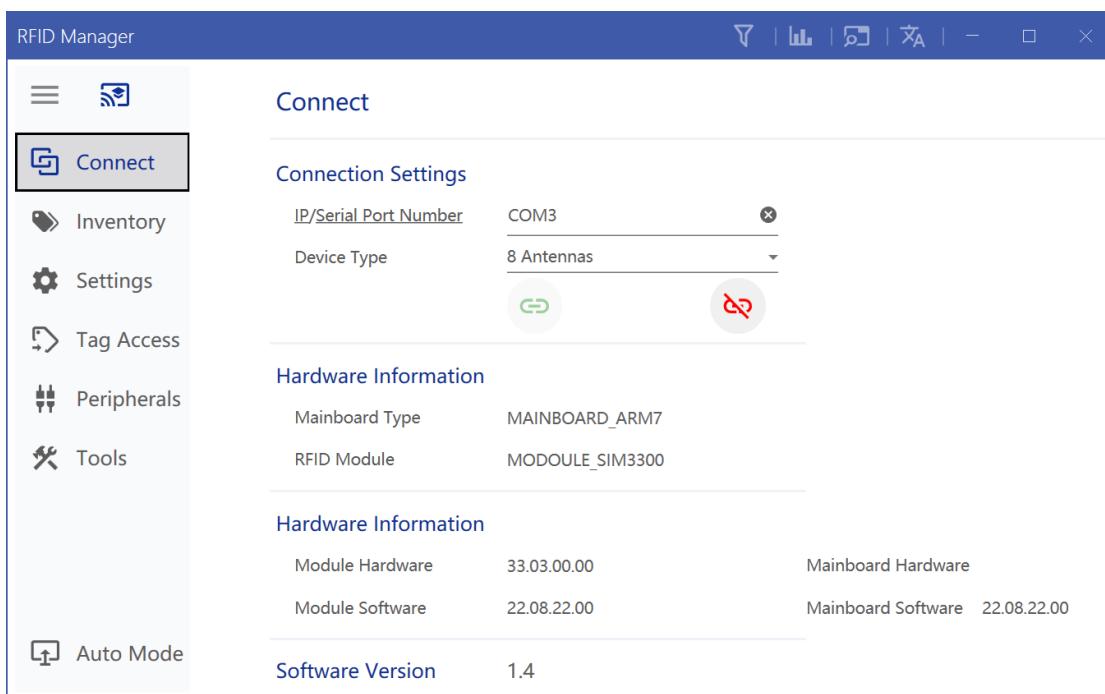


Figure 3

2.2 Serial Port Connection

To a serial port connection, you must first install a serial port devices (if it is using a USB serial port, or a card with USB port equipment) drive (<https://www.ftdichip.com/Drivers/D2XX.htm>), and then choose the correct serial port address. The address of the serial port can be found in the Port (COM and LPT) TAB of the Device Manager by right-clicking the computer icon on the desktop and selecting Device Management. As shown in Figure 4:

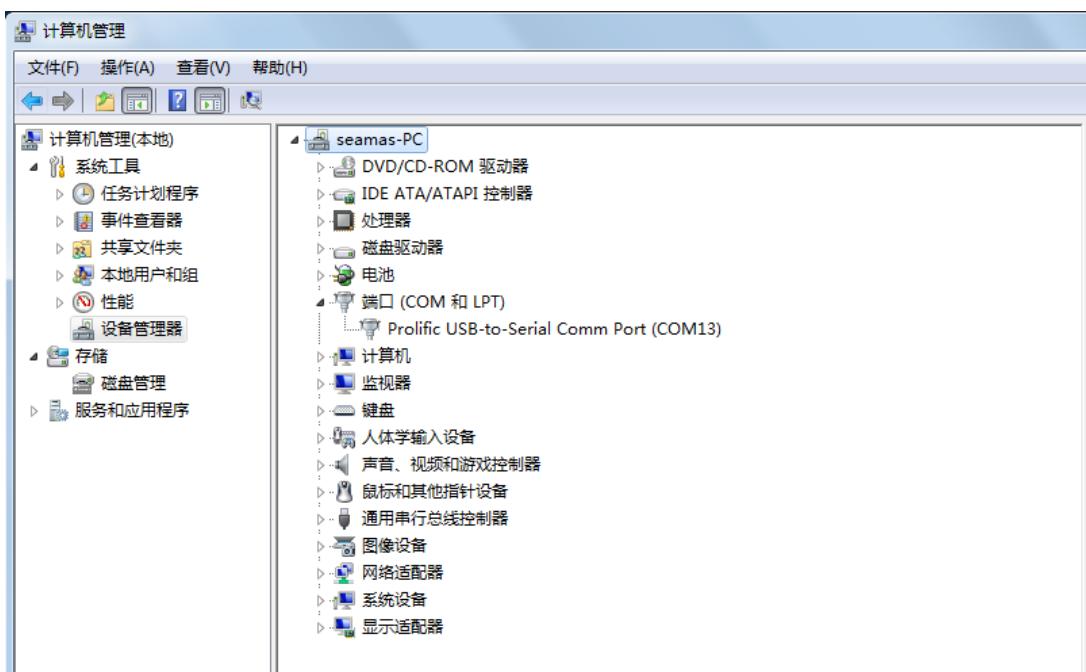


Figure 4

After determining the serial port of the reader, click the serial port number in the RFID Manager program to fill the first device serial port in the computer (if the first is not the serial port of the reader needs to be manually modified), and then select the corresponding antenna port. **The number of antenna ports is determined by the number of antenna ports supported by the reader rather than the number of antennas to be connected.**

After the address and the number of antenna ports are selected, click the green 'Connect reader' button to realize the connection. After the reader is correctly connected, you can see the relevant information of the device. The interface can refer to Figure 3.

II. RFID Manager Inventory

1. Inventory Interface

After the reader is connected successfully, click 'Inventory' in the left menu bar to enter the interface in Figure 5:

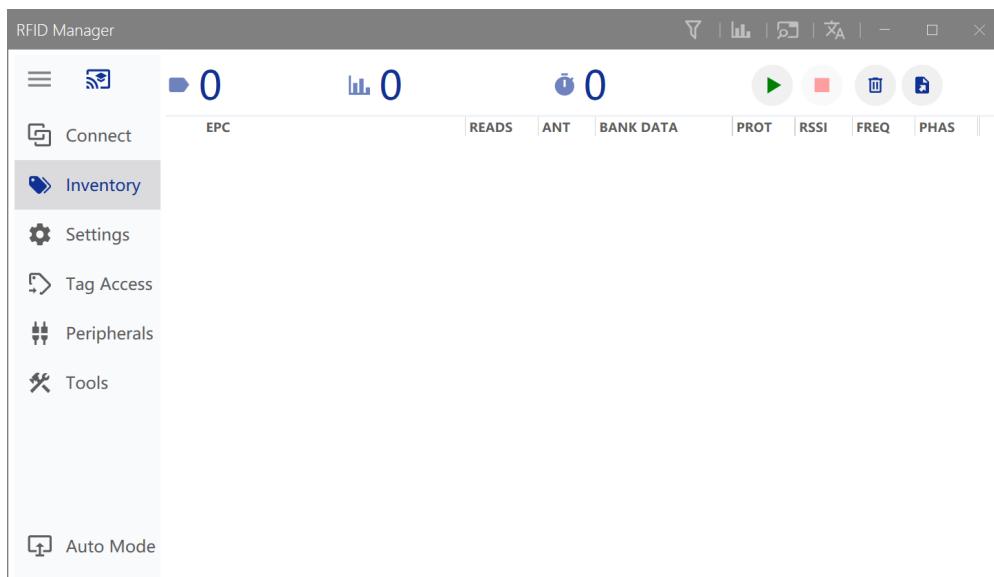


Figure 5

It contains 3 statistics, 4 action buttons. From left to right, the statistics include 'number of labels', 'label count times' and 'Time spent'. Action buttons include 'Start Count', 'top Count', 'Empty List', 'Export List'. The stocktaking effect is shown in Figure 6:



The screenshot shows the 'RFID Manager' software window with the 'Inventory' tab selected. The main area displays a table of 14 items, each with an EPC code, number of reads, antenna ID, bank data, protocol, RSSI, frequency, and phase. The table is as follows:

| EPC | READS | ANT | BANK DATA | PROT | RSSI | FREQ | PHAS |
|----------------------------|-------|-----|-----------|------|------|--------|------|
| E28068900005005BE02ED11 | 2 | 1 | | Gen2 | -43 | 910750 | 220 |
| E2000019991102032200BA6D | 2 | 1 | | Gen2 | -54 | 910750 | 152 |
| 300833B2DDD9014000000000 | 2 | 1 | | Gen2 | -44 | 910750 | 177 |
| 90000061 | 2 | 1 | | Gen2 | -43 | 910750 | 83 |
| 6628AAAA000000000000000000 | 2 | 1 | | Gen2 | -45 | 910750 | 124 |
| 90000027 | 2 | 1 | | Gen2 | -24 | 910750 | 204 |
| E2000019290601501090799F | 2 | 1 | | Gen2 | -24 | 910750 | 151 |

Figure 6

2. Tag Filtering

Click the 'label Filter' icon in the upper right corner, and the label parameter interface will appear at the bottom of the interface, as shown in Figure 7:

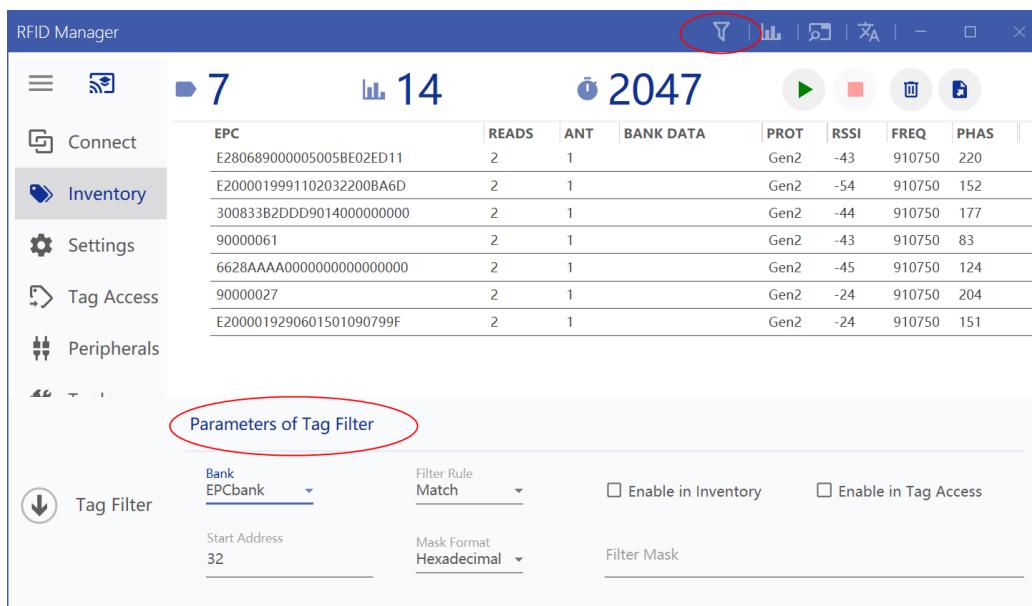


Figure 7

Filtering bank supports EPC Bank, TID Bank and User Bank. Filtering rules are divided into matched and unmatched.

The filtering format supports hexadecimal and binary. After select filter bank, filtering rule, start address and filter format will be filled by default, modify filter parameters according to business requirements. Finally, enter the filter mask and check the check box to enable the filtering function. Figure 8 shows the filtering demonstration:

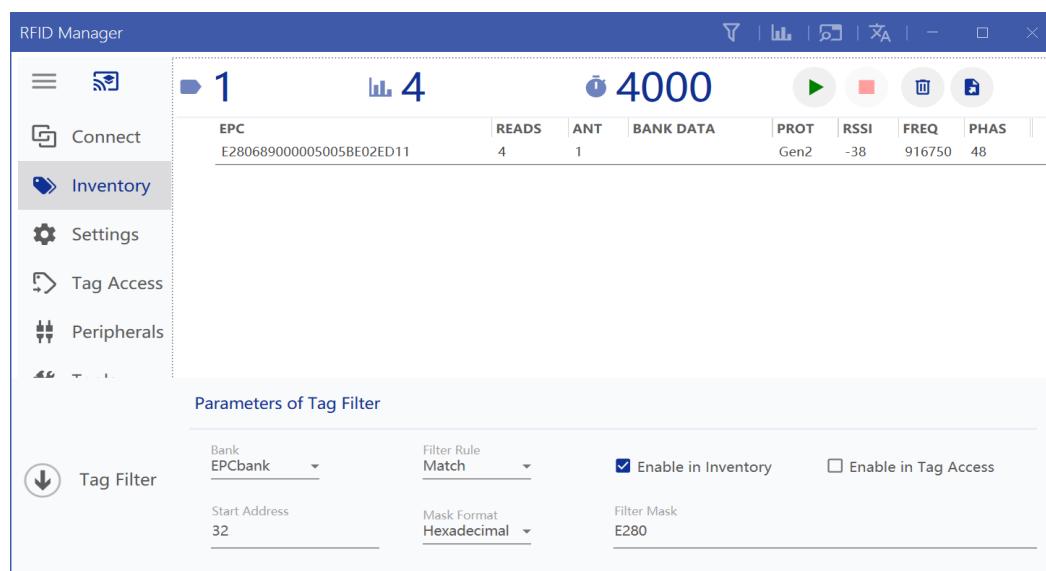


Figure 8

3. Inventory Statistics

After the reader counts, click the 'count statistics' icon in the upper right corner,

and the count statistics interface will appear at the bottom of the interface, as shown in Figure 9. The corresponding numerical statistics can be displayed by moving the mouse to the graph.

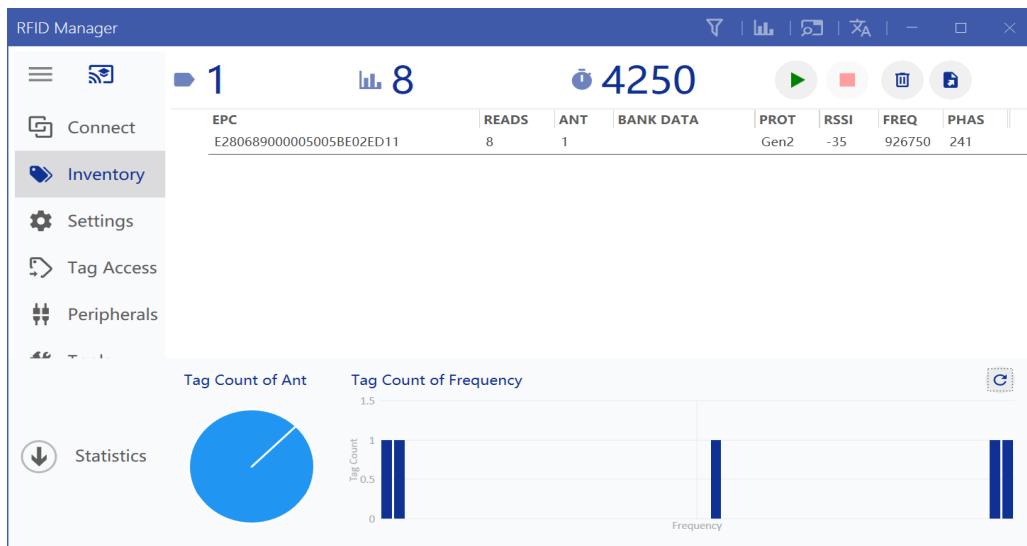


Figure 9

4. Command Debugging

Command debugging is off by default. You can enable command debugging according to Figure 10. After the debugging of instructions is enabled, the setting instructions for readers are printed.

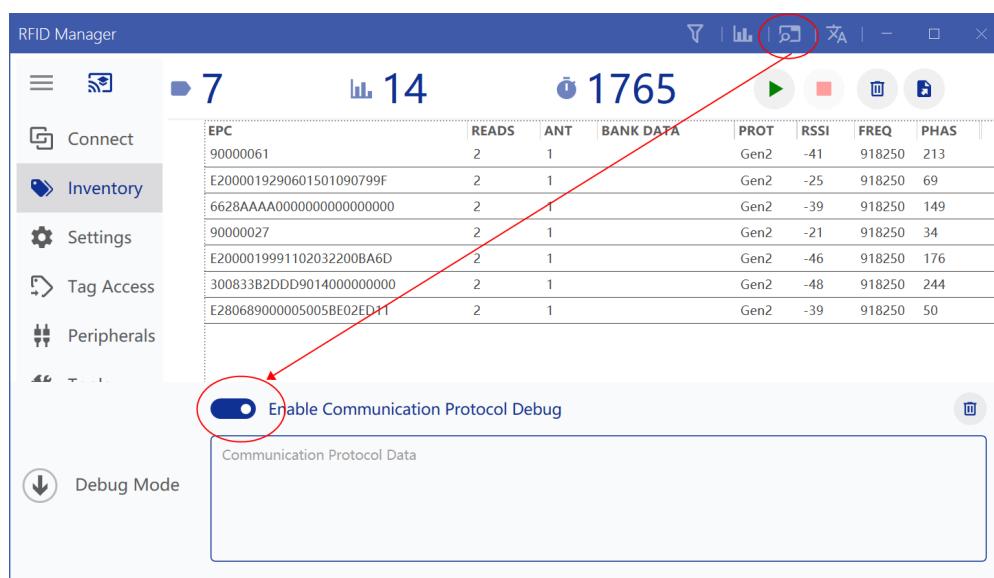


Figure 10

5. Language Switching

RFID Manager program comes with ‘Chinese’, ‘English’ two language package, the default is Chinese. You can also add the language package by yourself (the language package created by yourself needs to be created in accordance with the language package format of the program), put the language package created by yourself in the Lang file in the root directory of the RFID Manager program, and then restart the program. Click the icon to switch the language according to the instructions in Figure 11:

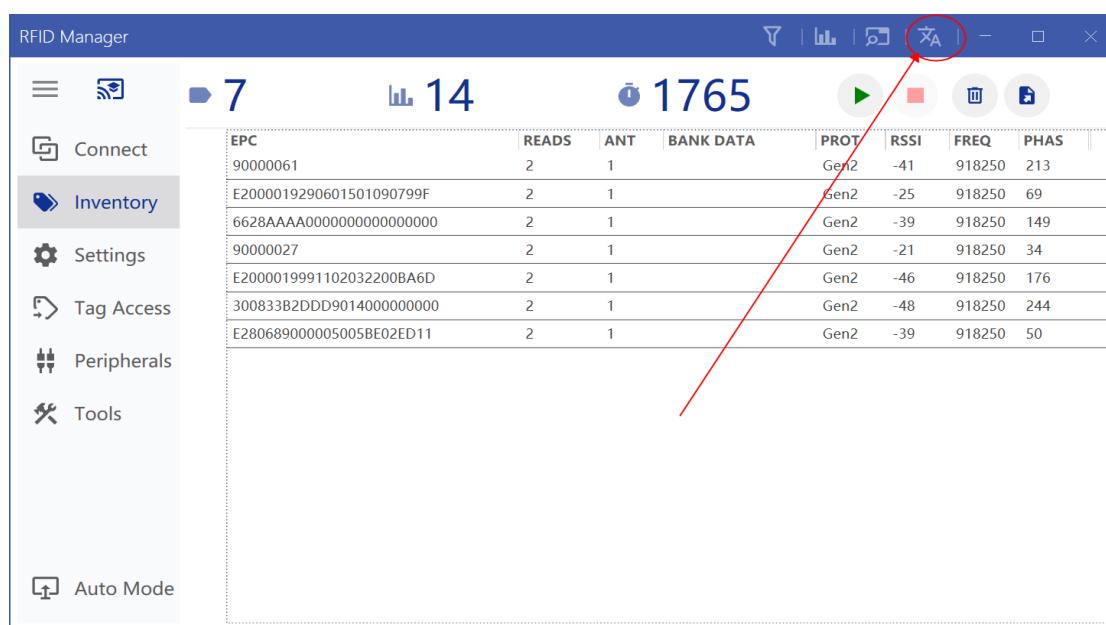


Figure 11

III. RFID Manager System Setup

1. Antenna Setup

The antenna setup interface displays the appropriate antenna based on the connected reader device.

(1) Obtain

Click the upper obtain button, prompt ‘Obtain parameters successfully’. Obtain parameters including antenna ‘read power’, ‘write power’, ‘connection status’.

(2) Set

Double click the antenna ‘read power’, ‘write power’, power can be edited, or in the bottom of all Settings to modify the power of all antennas. Check Enable antenna

and click the ‘Setting’ button at the top to prompt you to set the parameters successfully.

(3) Permanently Save

Can be permanently saved parameters are ‘read power’, ‘write power’. After saving successfully, the connection after the next power failure will be the permanently saved power. Refer to Figure 12.

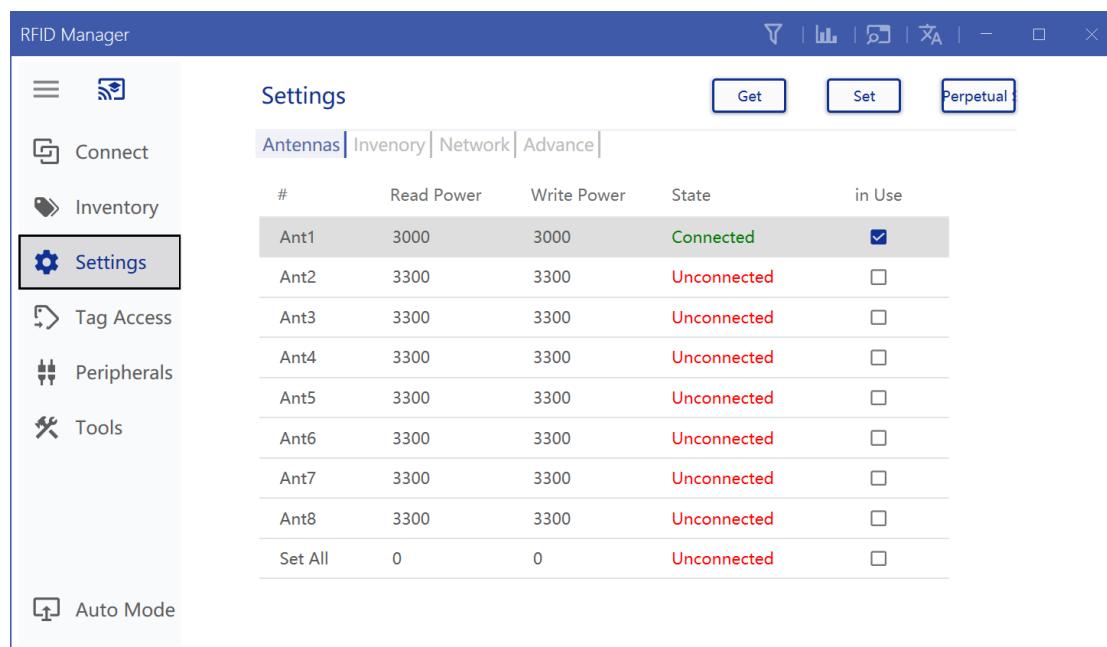


Figure 12

2. Inventory Settings

(1) Additional Data

When it is necessary to read some data in a bank while taking inventory labels, you can select ‘Enable additional data’, which can read up to 64 bytes of data. The starting address is the address in the tag bank, in the unit of block, the effective value of byte number cannot be greater than 64. Banks can be divided into Reserve bank (reserved area), EPC bank (EPC area), TID bank (TID area), and User bank (user area).

If you need to read the data in the reserved area and the data being read is locked, you need to provide an access password to read the data correctly. If multiple labels have different access passwords, but only one access password can be entered here,

only the data in the reserved area of the label with the correct password can be read. It should also be noted that for EPC area, TID area and USER area, no access password is required for the read operation. No matter whether it is locked or not, if an incorrect access password is provided, the data will not be read.

(2) Fast Mode

Read period, and read interval only work in non-fast mode. Read period indicates how long the reader works at one time, and read interval indicates how long it takes to open the next time.

Fast mode is divided into 'fast mode – Standard', 'fast mode - distance priority', 'fast mode - read times priority'. When selecting the fast mode standard, you can match the common parameters of inventory by yourself, and the latter cannot be modified.

(3) Inventory Common Parameters

Common parameters are Gen2 protocol parameters, including Gen2 Session, Profile, Gen2 Target, Gen2 Q Value. **The Permanent Save button in the inventory setting can only save the above four parameters.**

(4) Automatically Stop Counting

Enable automatic stop counting, after the counting interface reaches the specified conditions will automatically stop counting.

Note: After modifying the parameters in the inventory setting, you need to click the "Setting" button above, otherwise the setting cannot take effect.

3. Network Settings

The IP Settings bar is mainly used to change the IP address, subnet mask, and gateway of the device. Note that the IP address, subnet mask, and gateway must correspond to each other when setting the IP address. Otherwise, the IP address cannot be set. After saving the IP Settings, the reader will restart and you will need to reconnect the reader (the connection address is the changed Ip).

4. Advanced Settings

(1) Special Parameters

Frequency hopping mode: only valid in R2000 module device, this parameter is invalid under E series.

Antenna dwell time: The maximum working time of a single antenna (ms). In fast mode, if the antenna does not read the label, it will immediately switch to the next antenna. In non-fast mode, the antenna will work up to the maximum time and then switch.

Gen2 Write mode: The program provides two modes of ‘word write’ and ‘block write’, the default is ‘word write’ mode, some early labels do not support ‘word write’, you need to manually change the write mode to ‘block write’.

(2) Label Data Cache Settings

In the daily inventory process, when encountering labels of EPC system, the program provides three methods: ‘antenna number as unique identification’, ‘Bank data as unique identification’, and ‘record maximum RSSI’ in order to distinguish labels. The default is ‘Bank data as unique identification’, and multiple options are available.

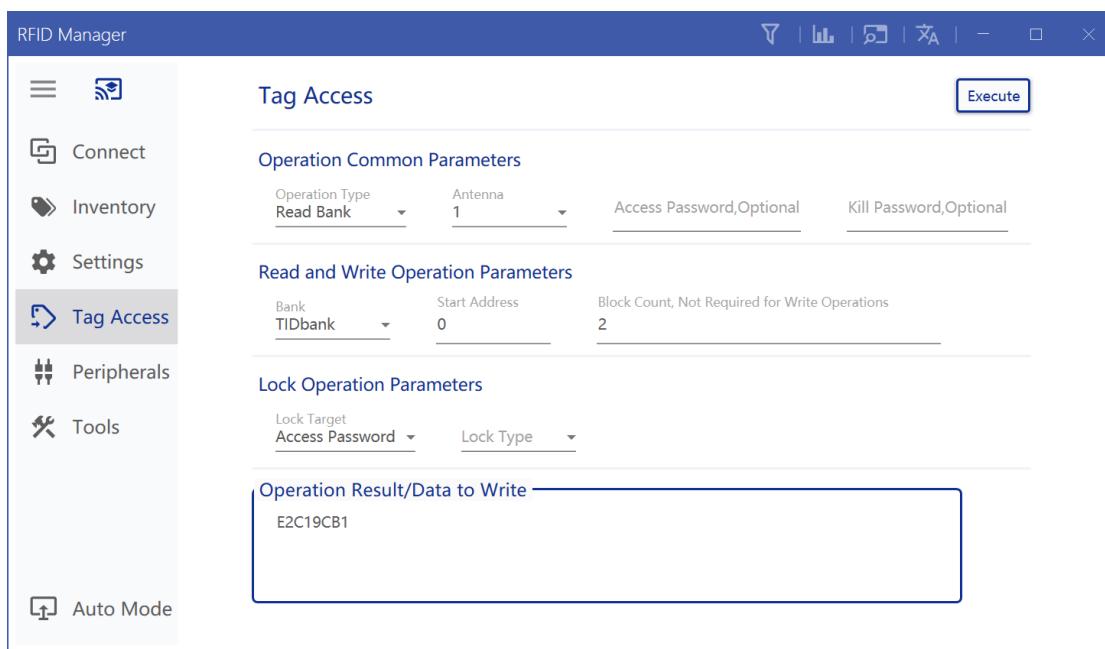
(3) Frequency Control Rules

Due to the different frequency band control rules of different countries and regions in the world, in order to match the frequency band of the reader, it is necessary to select the appropriate frequency band. In the regional setting, different regions can be set, such as North America, Japan, Europe, China, etc. Click ‘Get’ first to get the current region setting. Select the region and click ‘Settings’ to complete the selection of the frequency band. In the frequency modulation table, click ‘Get’ to display the current selected frequency point, or you can change the selected frequency point. Click ‘Set’ to complete the selection of frequency point. Regions and frequency points can be ‘permanently saved’

IV. Tag Operation

Tag operation supports ‘read bank’, ‘write bank’, ‘write EPC’, ‘lock tag’, ‘destroy tag’ five operations.

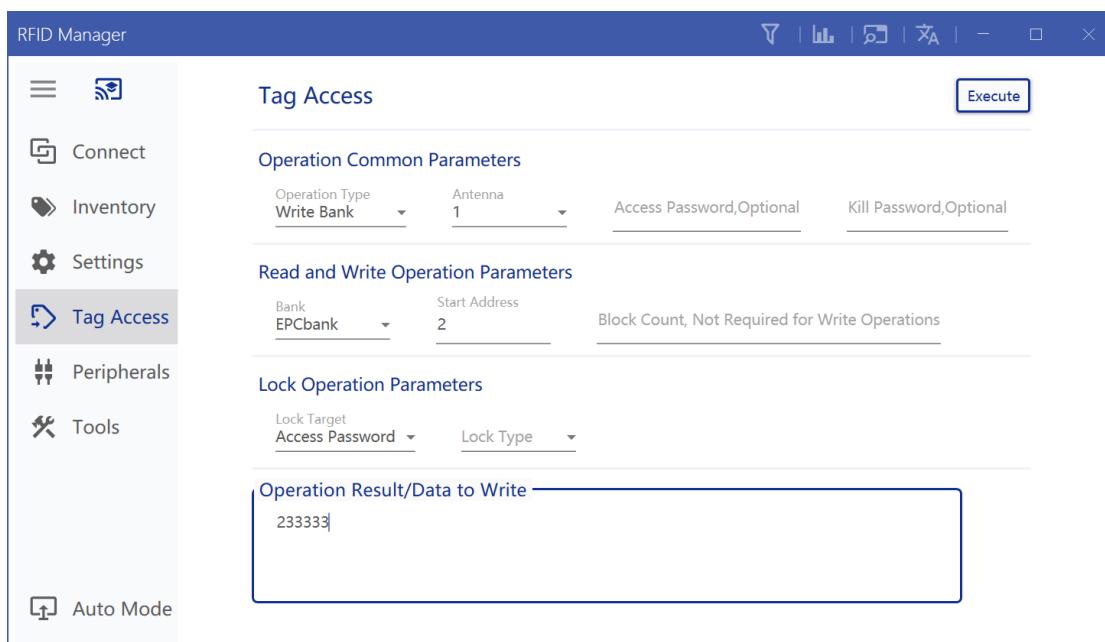
1. Tag Reading



In the above example, select 'Read Bank' in the operation type of operating common parameters, then select the antenna to read the tag. Read and write operation parameters Select the bank to be read, enter the start address and number of read blocks, and finally click 'Execute' in the upper right corner. After successful reading, the tag information will be displayed in the operation result below.

If you want to read the reserve bank and the tag is locked, you need to enter the access password to read the reserve bank.

2. Tag Writing



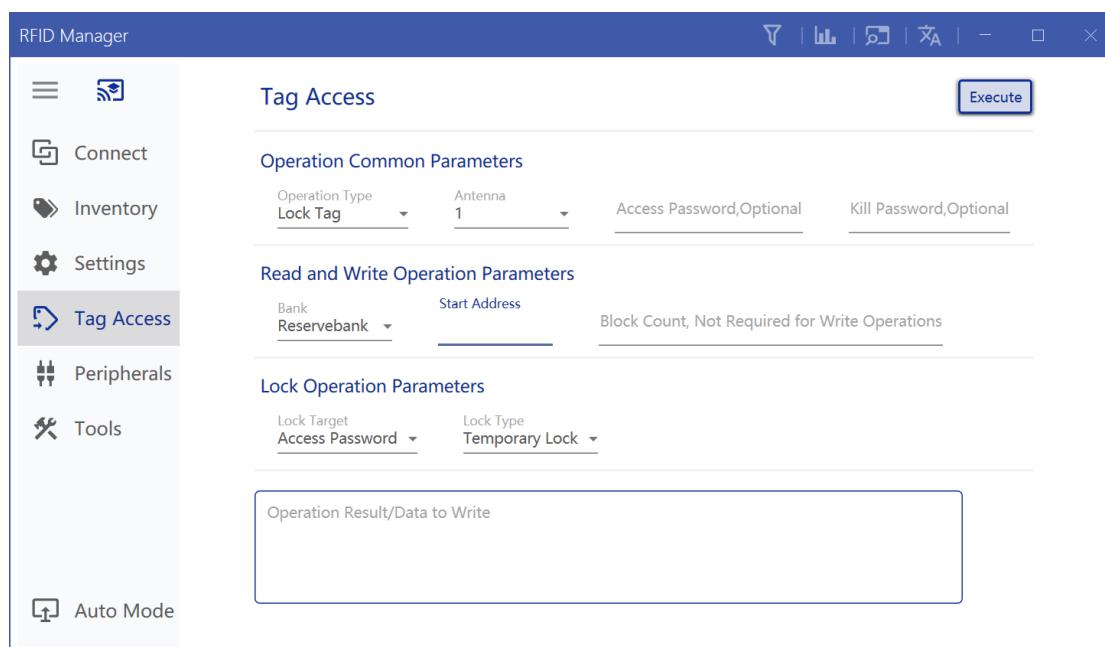
As an example, select ‘write Bank’ in the type of operation that operates common parameters, then select the antenna to write the tag. The read-write operation parameters select the bank to write to (TID cannot write to), enter the start address and below enter the tag data to write to. Click the ‘Execute’ button.

When the written bank is locked, you will need to enter the correct password for the write to succeed.

3. Lock the Tags

Lock operation is divided into 3 types are ‘unlock’, ‘temporary lock’, ‘permanent lock’. After being locked, the lock cannot be unlocked.

When reserve bank is locked, you must provide an access password to read it. When other reserve bank is locked, you can read it without a password, but you must provide an access password for write operations. (Access Password and Kill Password both belong to the reserve bank).



4. Destroy Tags

When a tag is locked, the tag is destroyed and cannot be used again. A destroy code must be entered to destroy the tag.

V. Peripheral Interface

GPI and GPO are universal input/output interfaces. For GPI input interface, the

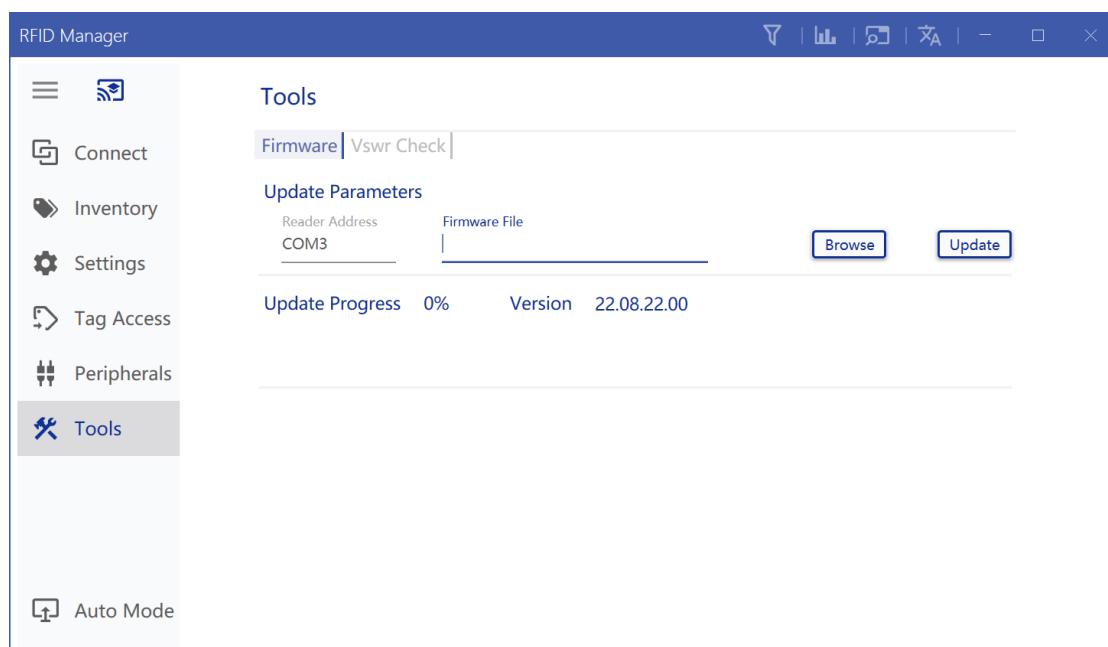
user can only obtain, for GPO input outlet, the user can set.

VI. Tools

1. Firmware Upgrade

Make sure the firmware file is valid before upgrading the firmware. There are two types of firmware: module firmware and communication board firmware. Upgrade module firmware through serial port and communication board firmware through network port.

Enter the address of the serial port or network address, click preview to select the firmware file, click upgrade and wait for the upgrade progress to complete. When the message is successful, you need to disconnect the power and reconnect.



2. Standing Wave Detection

Input antenna number and Tx power, then click 'Get' button, the result will be displayed below. The standing wave ratio test can detect the antenna performance, 0~1.5 is good performance 1.5~2 is average performance, 2 above is poor performance.

RFID Manager

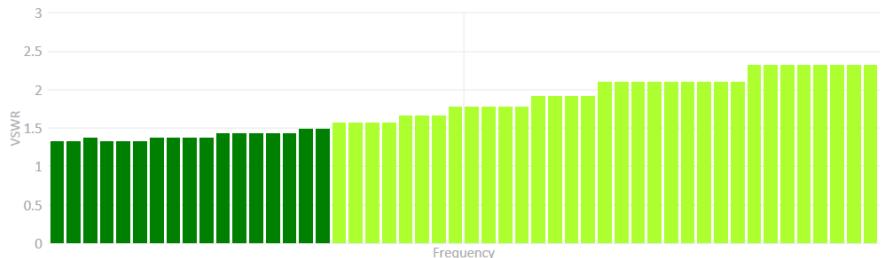
Tools

Firmware | **Vswr Check**

Parameters

Antenna detected: 1 Tx Power: 3300

Frequency-VSWR



VSWR

Frequency

Auto Mode