Superisys RF-LC Series Reader Demo

Operate Manural

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1.Software Introduction

RFID Controlor is a PC-based testing demo software designed for the RF-LC/H/U series integrated industrial-grade RFID readers/writers. It includes the following functions:

- Communication connection and parameter setting for the reader/writer.
- Testing of the reader/writer's read/write functions and monitoring of read/write data.
- Testing of the reader/writer's diagnostic functions
- Testing of the reader/writer's automatic caching function and data monitoring.

All descriptions of read/write head operations and data writing to the transponder in this manual pertain to the user data area of the transponder.

1. Software Usage

Unzip the "RFID Controlor" demo software, open the folder, and double-click on “RFID controller”



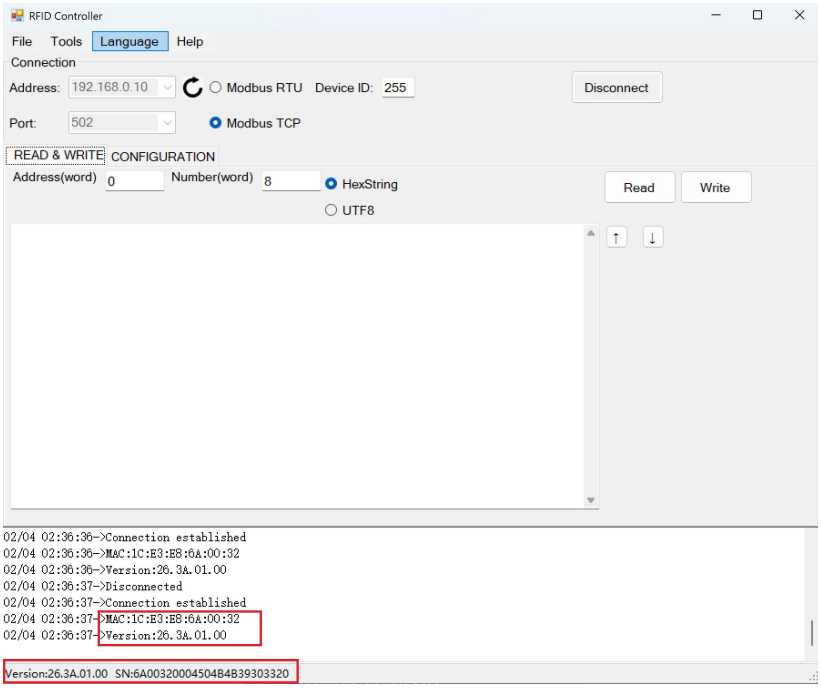
2.1 Read/write head communication connection

The RF-LC series reader/writer heads support both Modbus RTU over serial port and Modbus TCP over Ethernet. The default communication parameters are as follows:

Communication Type	Communication protocol	Interface default parameters		
Serial Port	Modbus RTU	COM： COMxx	Baud rate： 115200	ID： 1
Ethernet	Modbus TCP	IP address： 192.168.0.10	Port number： 502	ID： Default 255

This manual for Modbus TCP communication as an example. The default IP address for Modbus TCP communication is 192.168.0.10, and the port number is 502.

Click the "Connect" button in the upper right corner to establish a communication connection with the reader/writer, as shown below:

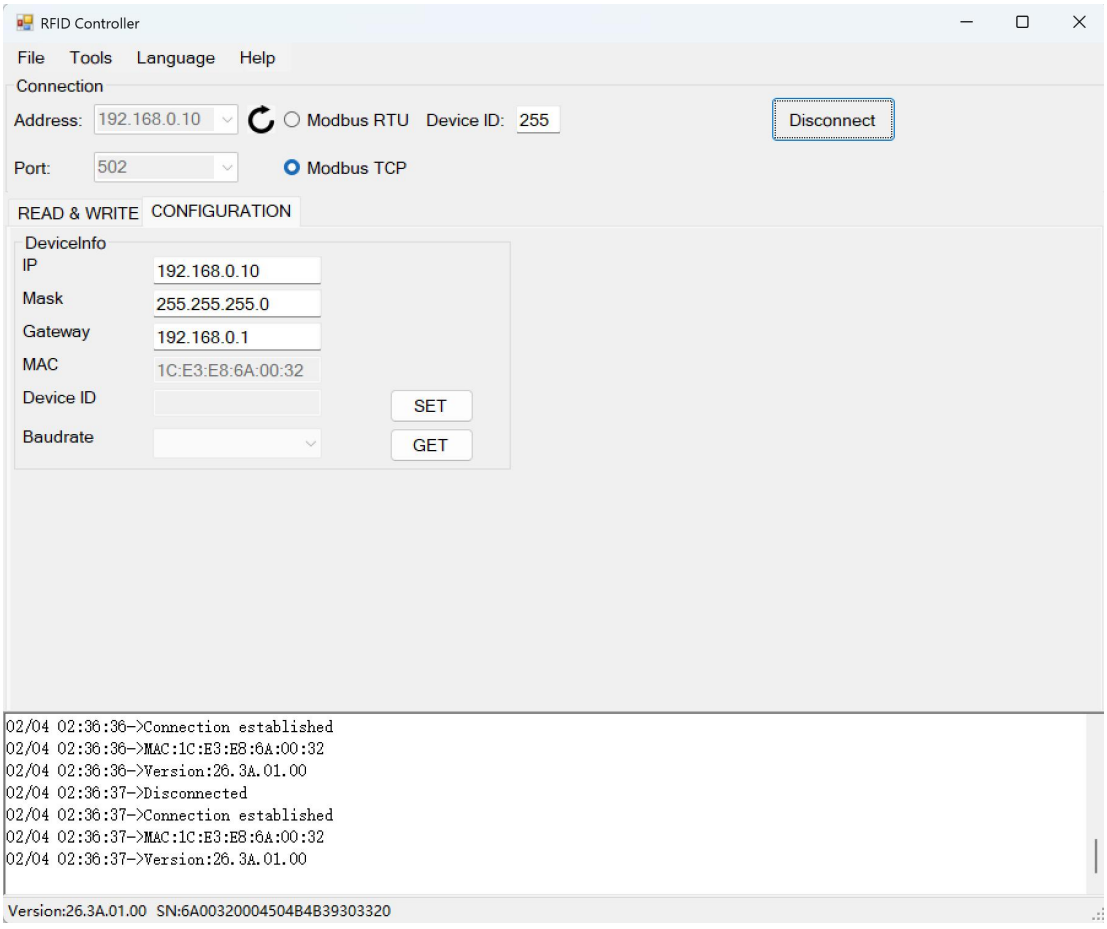


After the read/write head communication connection is successfully established, the information data monitoring panel below will automatically display:

- The MAC address of the read/write head – MAC: XXXX;
- The software version number – Version: XXXX;
- The serial number of the read/write head – SN: XXXX.

2.2 Read/Write Head Parameter Configuration

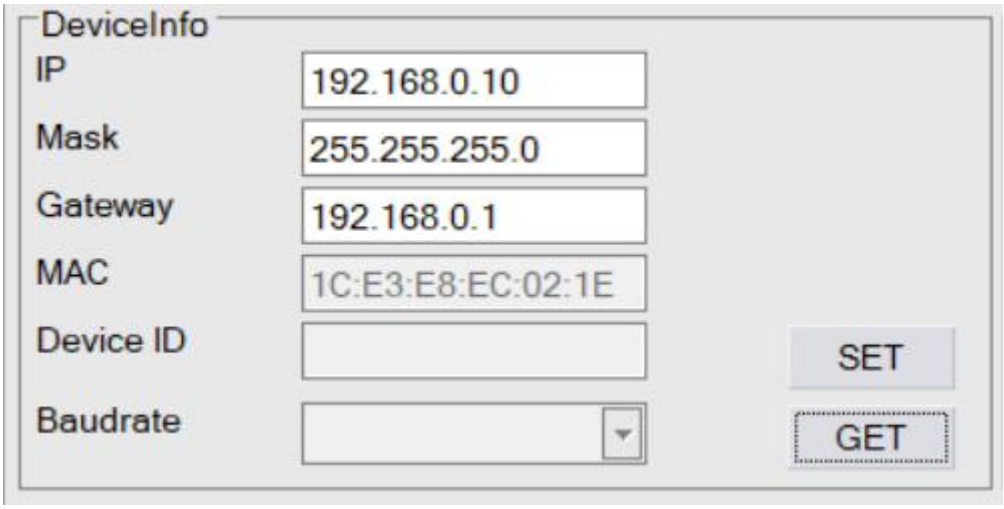
After the read/write head is successfully connected, click on the "CONFIGURATION" parameter configuration section, as shown below:



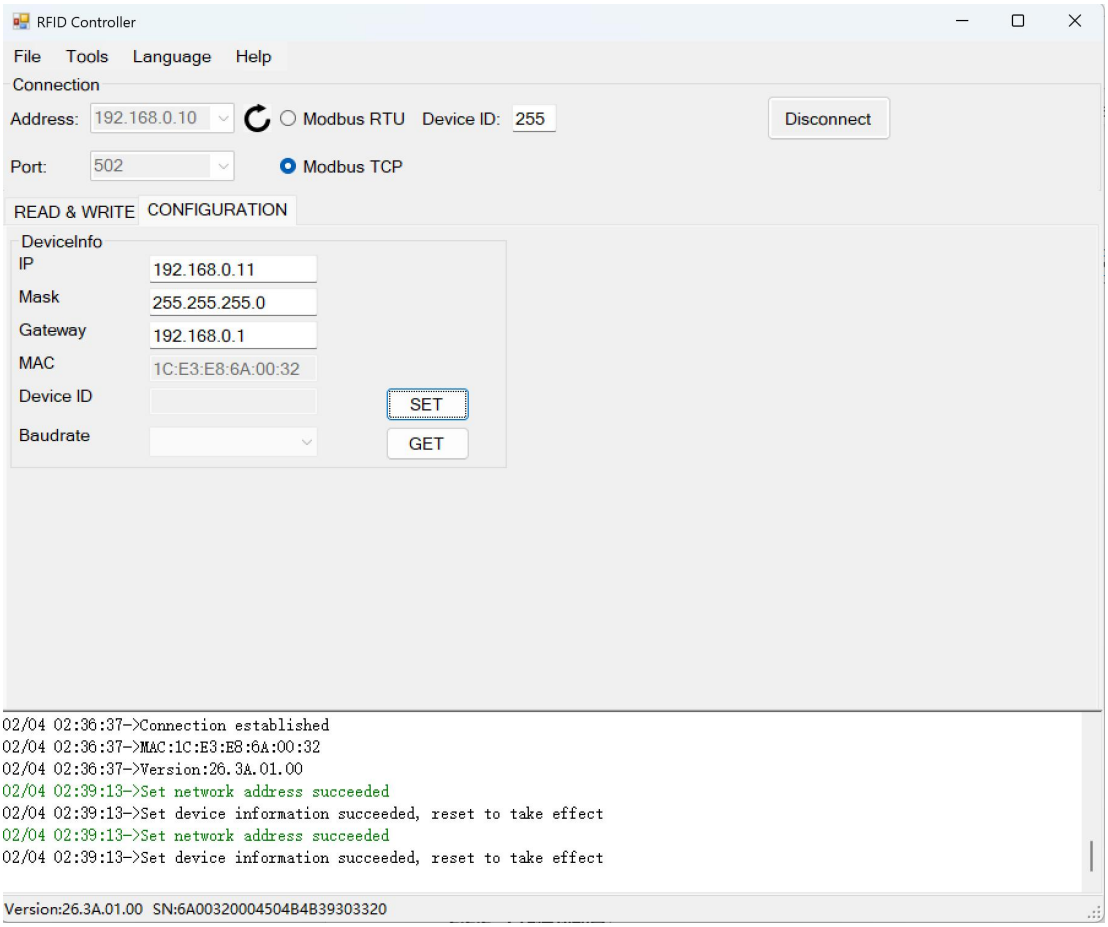
2.2.1 Communication Parameter Configuration

Click "GET" in the lower right corner to obtain the communication parameters of the reader/writer, as shown in the image below. The parameters obtained

are the default communication parameters of the reader/writer:



Change the IP address of the reader/writer to 192.168.0.11, then click the "SET" button to set the modified IP address of the reader/writer, as shown in the image below:



After successful configuration, the data monitoring panel below will display the message "Set network address succeeded."

Note: Note: After changing the IP address of the read/write head, a power cycle (turning the device off and on again) is required for the changes to take effect.

2.3 Read/Write Head Functionality

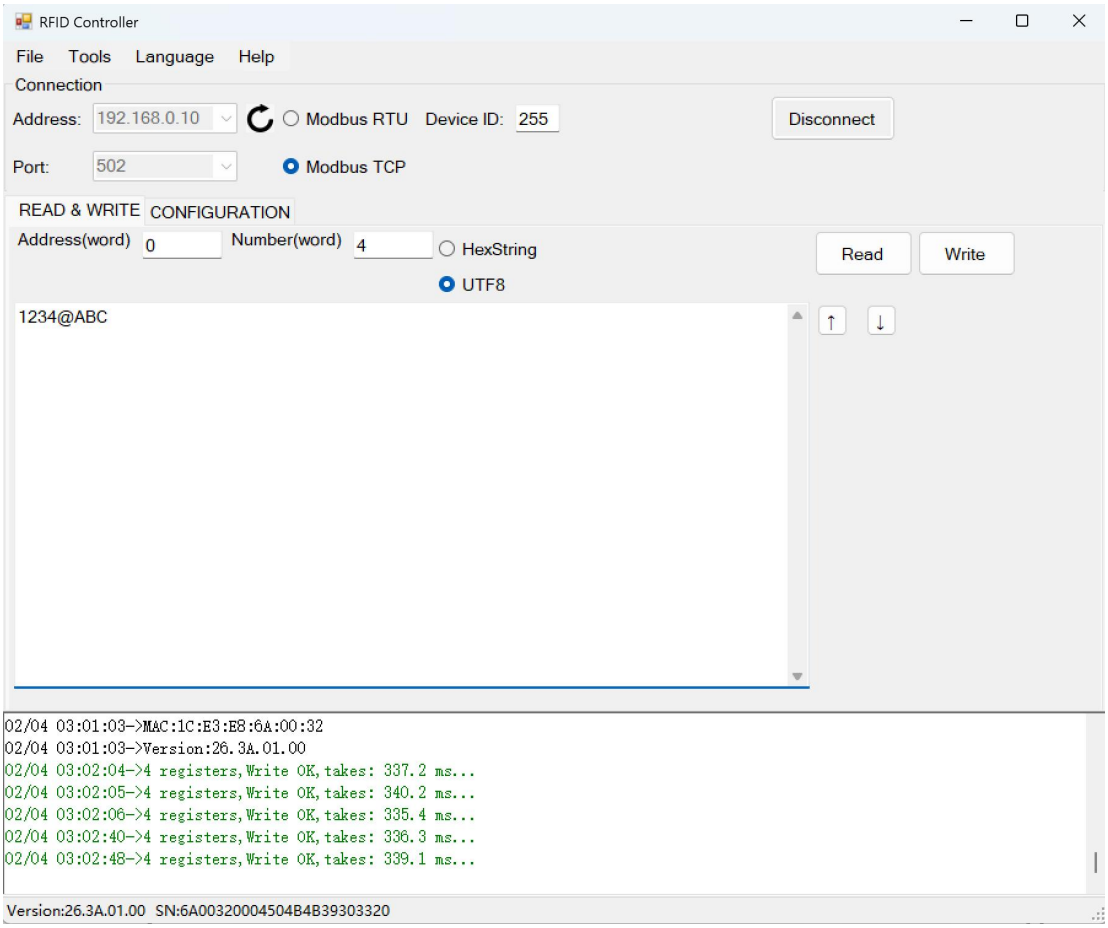
The read/write head's functionality is used to read and write data to the user memory area of the tag.

Click to select the "READ&WRITE" option, manually enter the "starting address" and "word length" of the user memory area to be read or written, and select the data format for reading and writing (default is "HexString" 16-bit hexadecimal data format, but "UTF8" character data format can also be selected), as shown in the figure below:

Note: All functions in section 2.3 of this manual use the "UTF8" data format for read/write testing.

2.3.1 Write Function

After setting the starting address and word length, select the "UTF8" data format, enter the character data to be written in the text box below, and click the "Write" button to perform the write operation, as shown in the figure below:

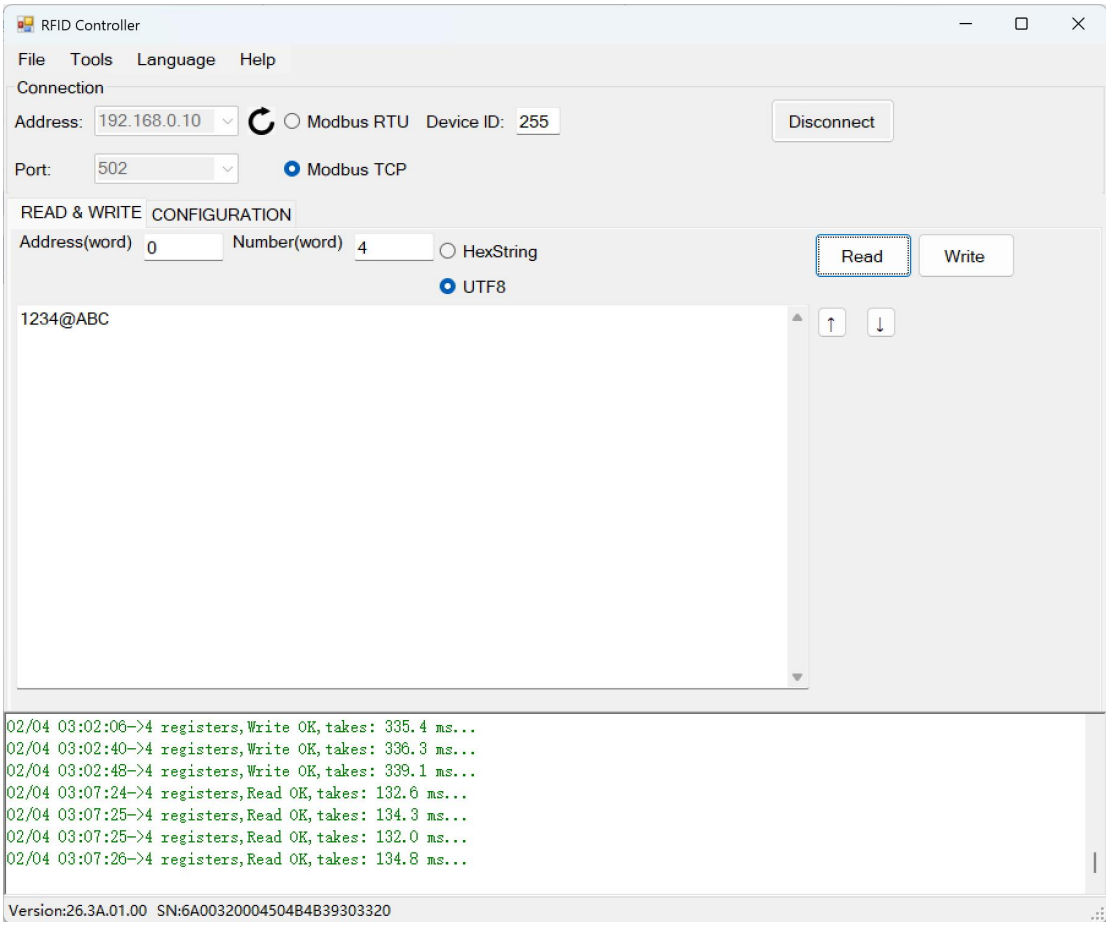


After a successful write operation, the information bar below will display "Write user memory succeeded" and show that the operation took "339ms".

2.4.2 Read Function

After setting the starting address and word length, select the "UTF8" data format and click the "Read" button to perform the reading operation, as shown in the figure

below:



After a successful read operation, the information bar below will display "Read user memory succeeded," and the time taken for this operation will be shown as "134.8ms".

The data displayed in the data text box is "1234@ABC". Comparing this with the data written in section 2.3.1, it can be concluded that the read/write head's data reading and writing functions are working correctly.

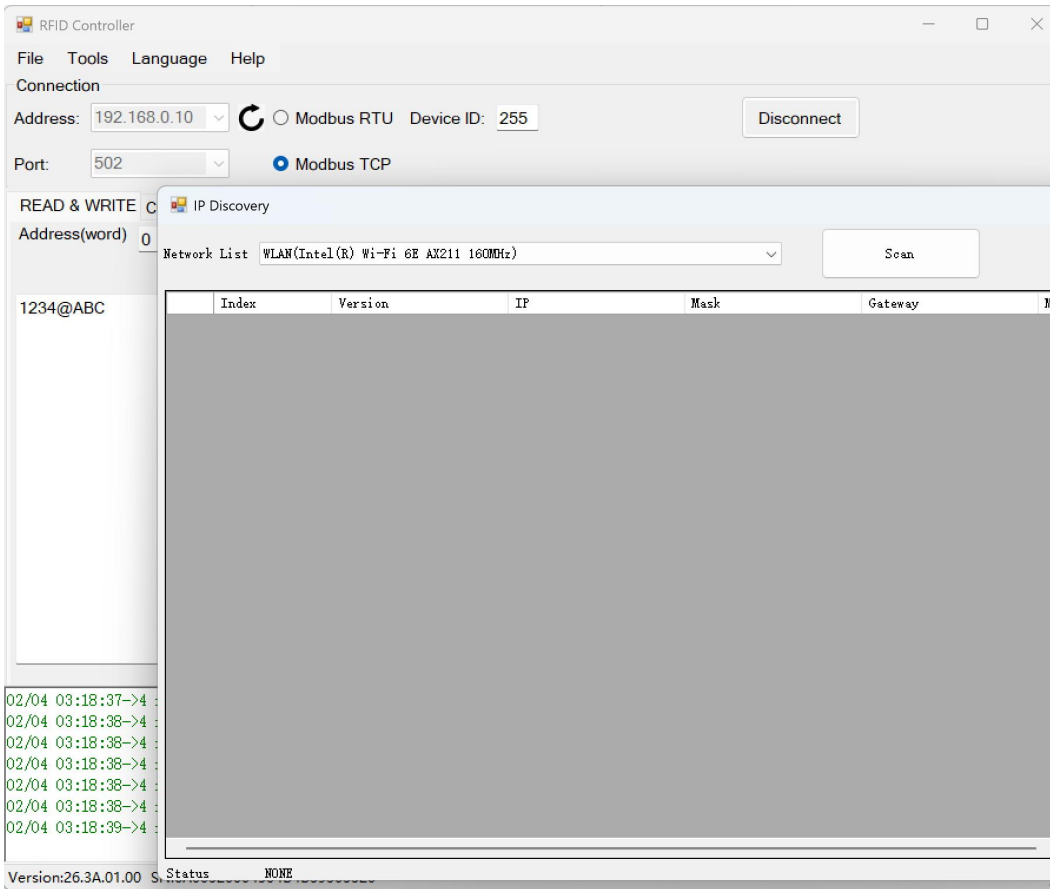
Note: Under the Modbus communication protocol, the maximum number of registers that can be read or written at one time with the RF-LC series read/write heads is **68.**

3. Software Extension Features

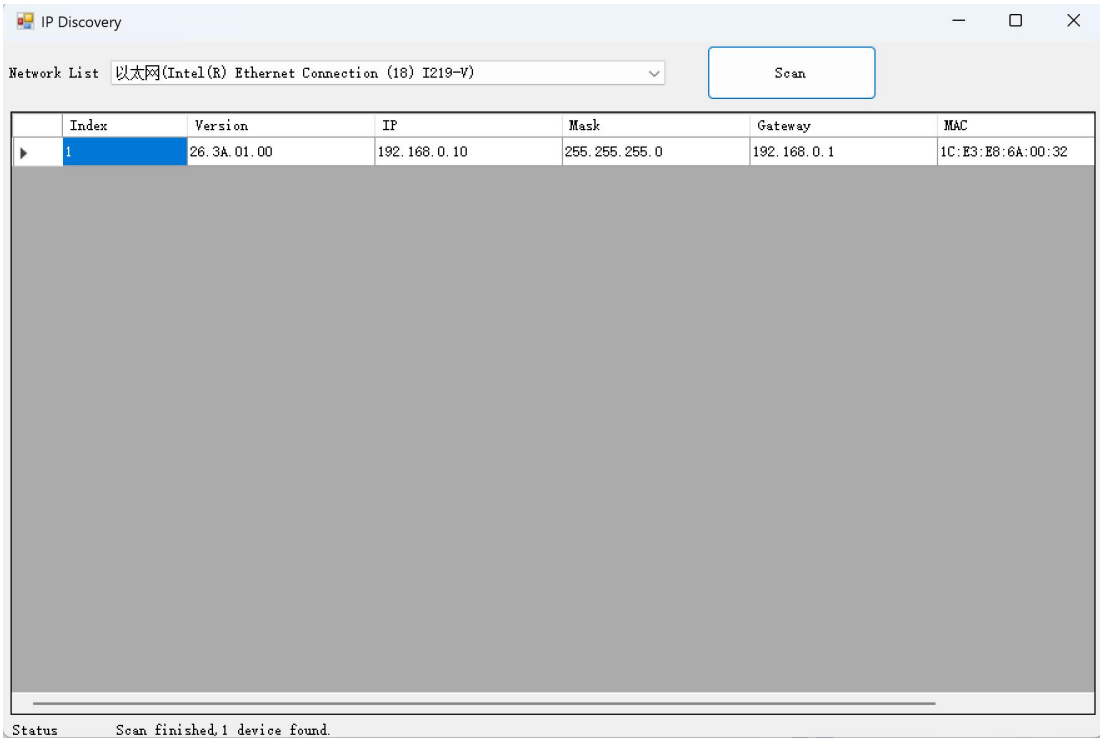
In addition to basic testing functions, the RFID Controller Demo software also includes extended debugging features.

3.1 Reader/Writer Search Function

Click the "Tools" toolbar, select the "RFID Search" tool, and in the pop-up "IP Discovery" dialog box, select the corresponding Ethernet adapter, then click Search to search for the reader/writer's IP address, as shown in the figure below:

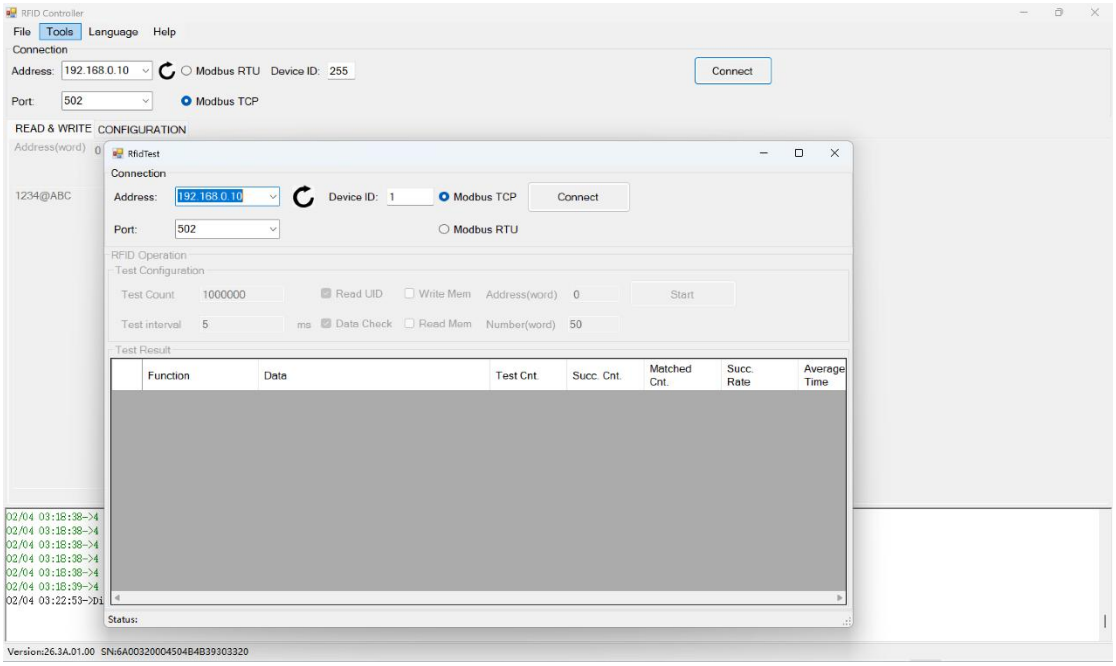


After the search is complete, the number of read/write heads and their corresponding IP address information are displayed as shown in the image below:


IP Discovery
Network List
以太网(Intel(R) Ethernet Connection (18) I219-V)
Scan
Index
Version
IP
Mask
Gateway
MAC
1
26.3A.01.00
192.168.0.10
255.255.255.0
192.168.0.1
1C:E3:E8:6A:00:32
Status
Scan finished, 1 device found.

3.2 Read/Write Head Testing Function

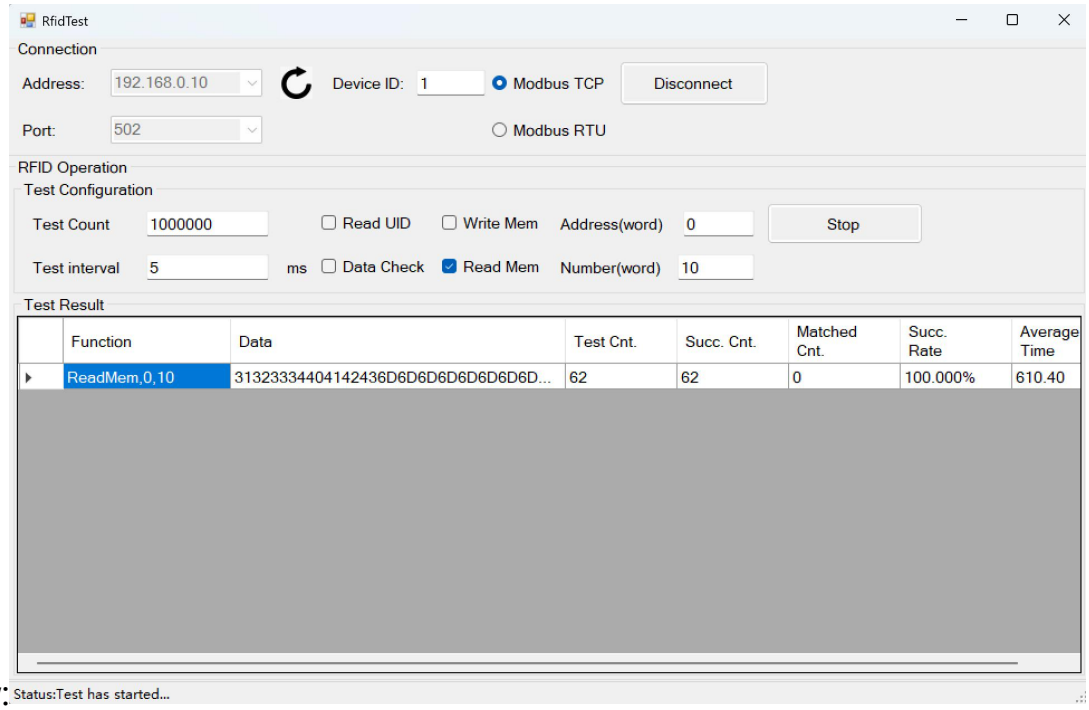
Click the "Tools" toolbar, select the "RFID Tester" tool, and in the pop-up "RfidTest" dialog box, enter the read/write head's IP address and port number. Click "Connect" to establish a connection. After a successful connection, in the "RFID Operation" section below, set the total number of tests, the test time interval, the starting address for reading/writing data, and the word length of the data. Click the "Start" button to begin the test. (Note: Since low-frequency tags do not have a UID, only a user area, the ReadUID function will fail), as shown in the image below:



3.2.1 User Area Read Function Test

Under the "Test Configuration" section, check the "Read Mem" and "Data Check" options (the Data Check option can be selected or deselected depending on the actual situation), then click the "Start" button to begin the automatic test, as shown in the image

below:



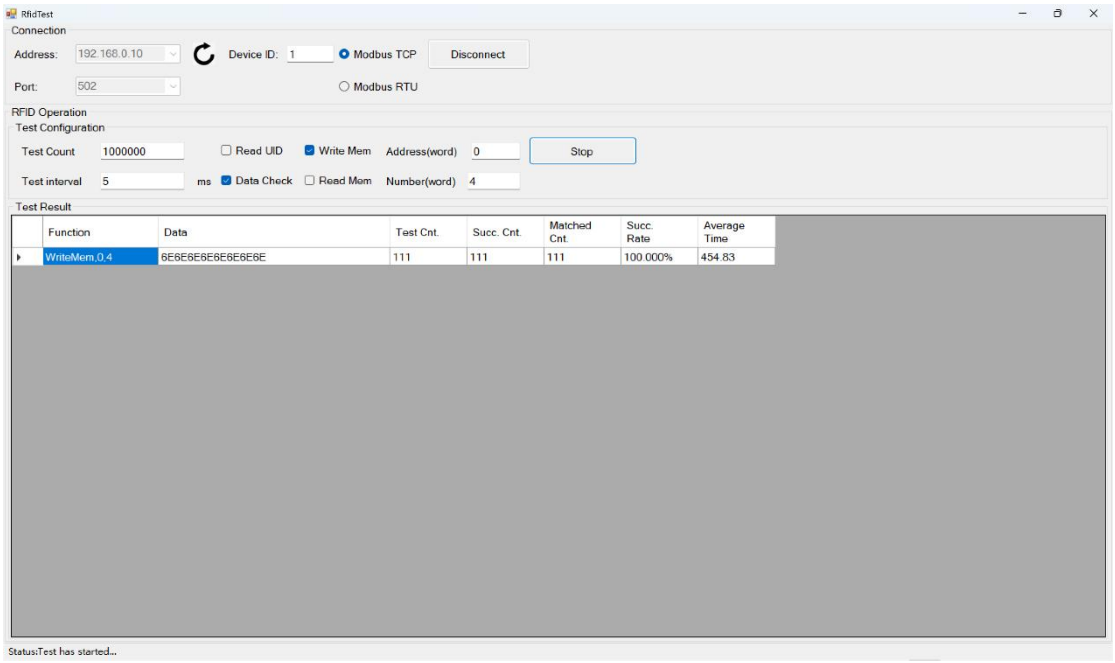
The following information is displayed under the "Test Result" section:

- Function: Read memory area, starting address 0, word length 10;
- Data: Memory data: XXXX;
- Test Cnt: Number of tests: 62;
- Succ Cnt: Number of successful tests: 62;
- Matched Cnt: Number of data verification matches: 0 (This counter is invalid as "Data Check" was not selected for this test);
- Succ Rate: Test success rate: 100%;
- Average Time: Average time: 610.40ms

3.2.2 User Area Write Function Test

Under the "Test Configuration" section, check the "Write Mem" and "Data Check" options (the "Data Check" option can be selected or deselected depending on the actual situation), and then click the "Start" button to begin the automatic test, as shown in the image

below:



The following information is displayed under the "Test Result" section:

- Function: Write to memory area, starting address 0, word length 4;
- Data: Memory data: xxxxxxxx... (The data written increases incrementally each time);
- Test Cnt: Number of tests performed: 111;
- Succ Cnt: Number of successful tests: 111;
- Matched Cnt: Number of data verification matches (This counter is only active when "Data Check" is selected);
- Succ Rate: Test success rate: 100%;
- Average Time: Average time: 454.83ms;

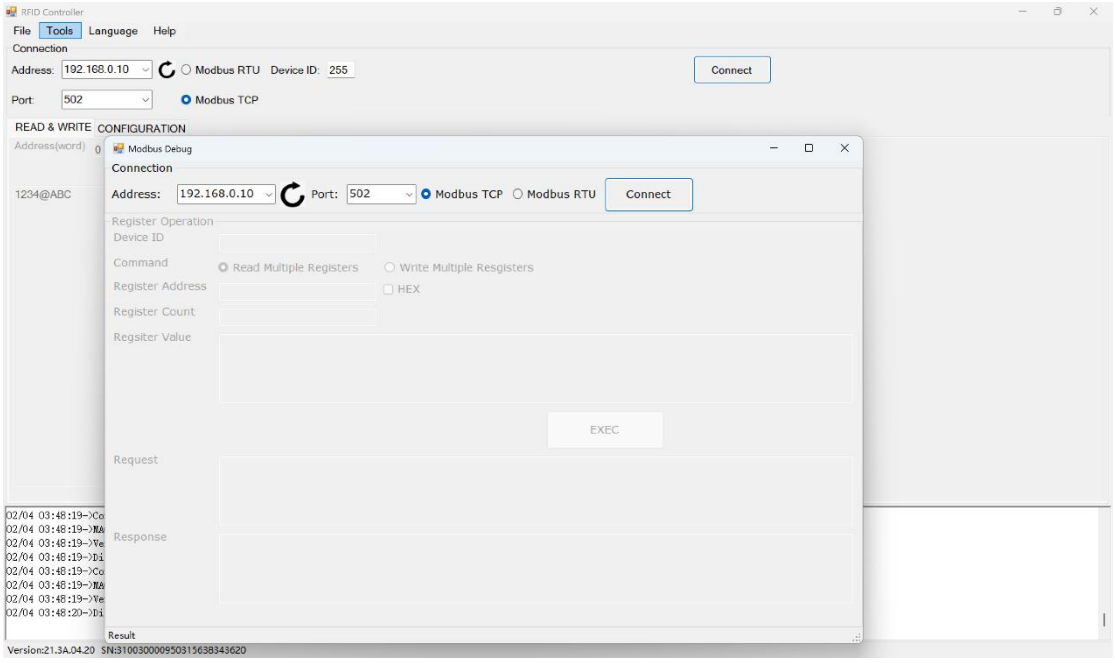
Note: When using the read/write test function in section 3.2, both "Read Mem" and "Write Mem" functions can be selected and tested simultaneously.

3.3 MODBUS Test Function

Click the "Tools" toolbar, select the "Modbus Debug" tool. In the "Modbus

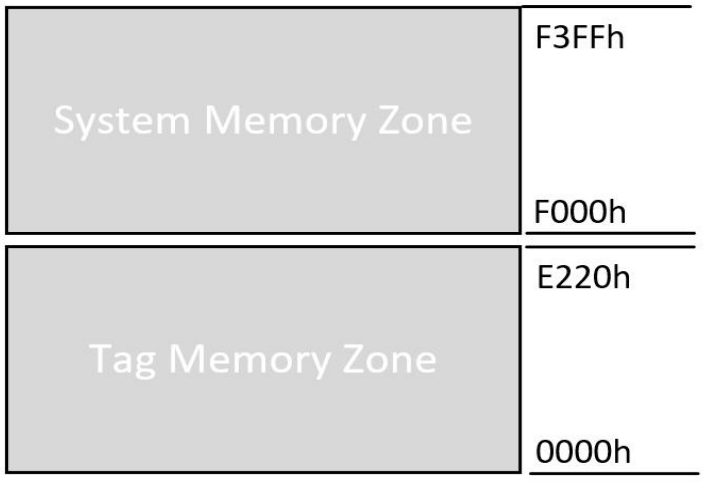
Debug" dialog box that appears, enter the read/write head IP address and port number, then click "Connect". After a successful connection, set the corresponding parameters in the "Register Operation" section below, as shown in the

image:



3.3.1 Modbus Register Reading Function

The memory area addresses for low-frequency tags are defined as follows:



The user memory area is defined based on the size of the tag's user memory, mapped to the user memory area within the reader head, allowing for read

and write access to the tag.

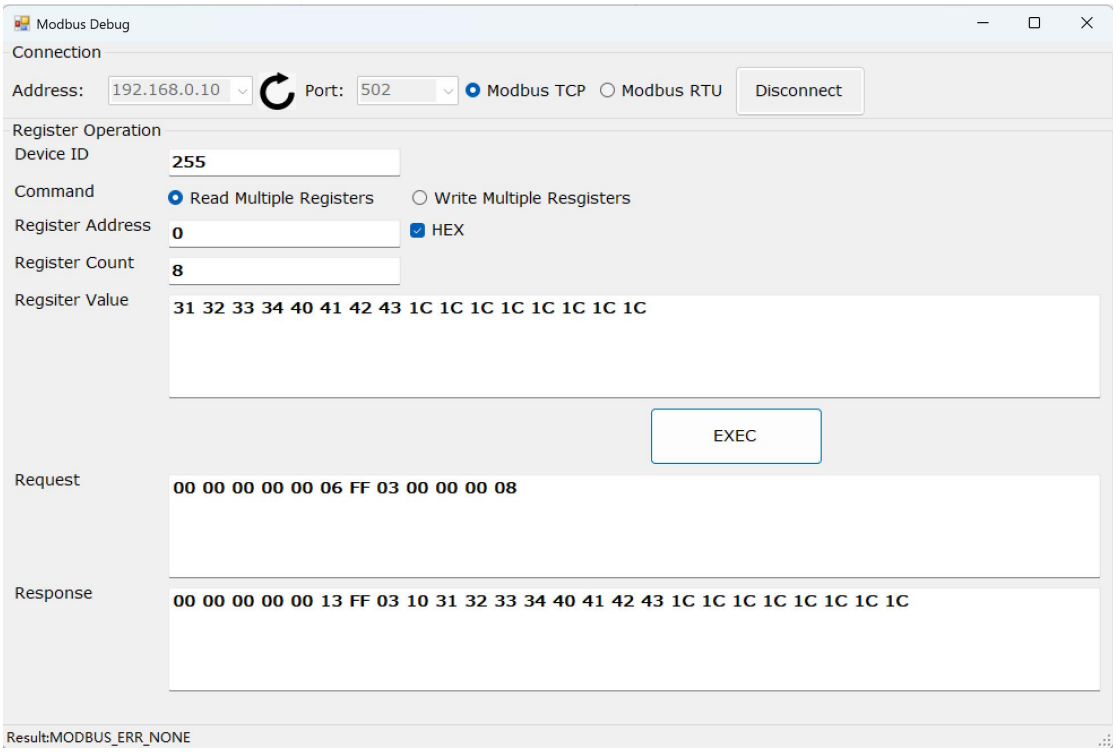
Taking TI's RI-TRP-DR2B tag as an example, when the reader head has only 1 antenna, the minimum address mapped to the user memory area is 0, and the maximum address is 67 (43 H). An error will be returned if the access exceeds the tag's maximum memory address.

When the reader head has multiple antennas, different antennas are controlled through accessing different MODBUS addresses for RFID memory reading. The address definitions for each antenna are as follows:

Antenna	Starting address	Address range to access
Antenna1	0X00	0X00~0X43
Antenna2	0X200	0X200~0X243
Antenna3	0X400	0X400~0X443
Antenna4	0X600	0X600~0X643

Antenna 1 USER DATA Area Register Read Function

Under the "Register Operation" section, set the read/write head ID ("Device ID"), the starting register address ("Register Address"), and the number of registers ("Register Count"). Click the "EXEC" button to perform the register read test, as shown in the image below:

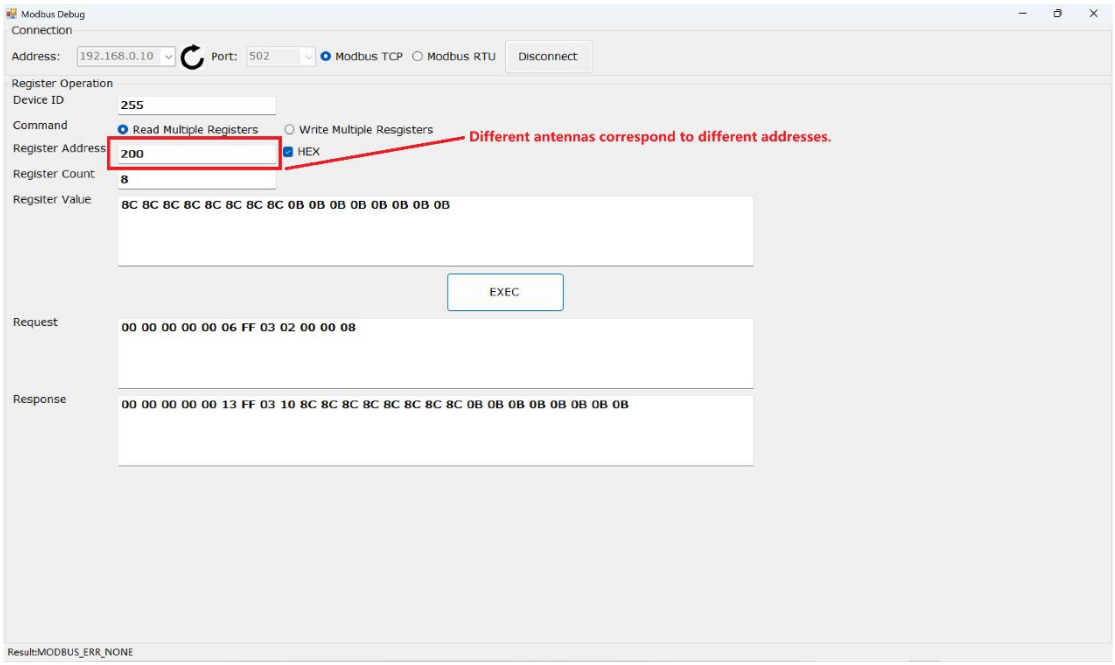


- Device ID – Reader/Writer ID: 255 (Under Modbus TCP protocol, this ID is not required and defaults to 255; under Modbus RTU protocol, it is the slave ID of the reader/writer, defaulting to 1);
- Register Address – Starting register address: 0; (If you want to read from a different antenna, you need to change this starting address to the corresponding antenna's starting address);
- Register Count – Number of registers: 8;
- Register Value – Read register value: XXXX;
- Request – Request data frame: XXXX;
- Response – Response data frame: XXXX;

» Antenna 2 USER DATA Area Register Read Function

Under the "Register Operation" section, set the read/write head ID ("Device ID"), the starting register address ("Register Address"), and the number of registers ("Register Count"). Click the "EXEC" button to perform the register read test, as shown in the image

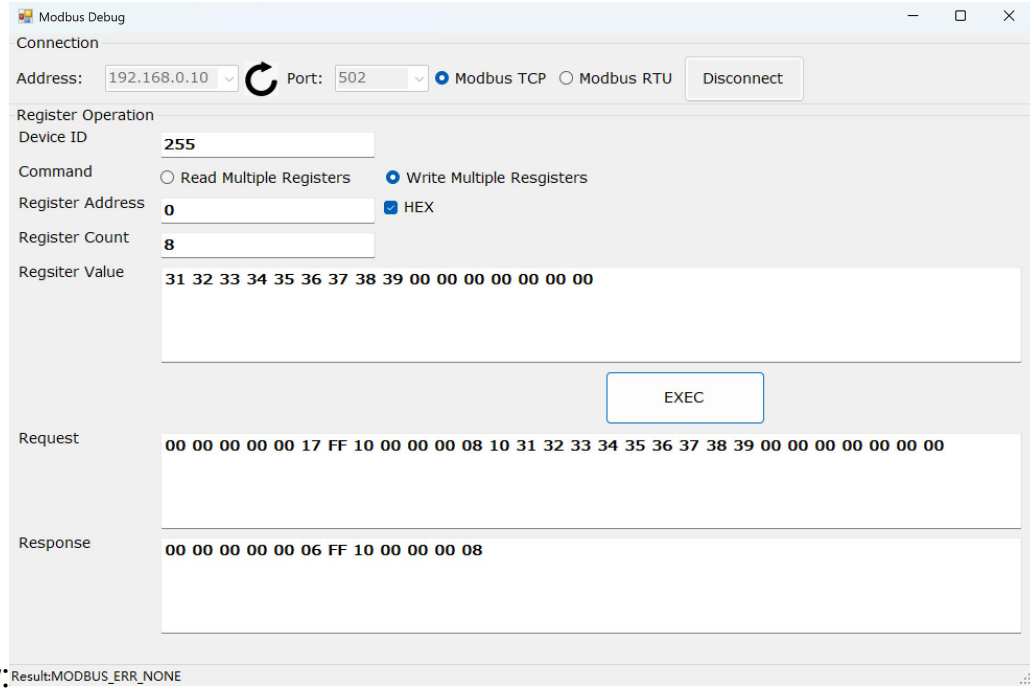
below:



3.3.2 Modbus Write Register Function

» Antenna 1 USER DATA Area Data Write Test

Under the "Register Operation" section, set the read/write head ID ("Device ID"), the starting register address ("Register Address"), and the number of registers ("Register Count"). Then, enter the value to be written to the registers in the "Register Value" field, and click the "EXEC" button to perform the register write test, as shown in the figure



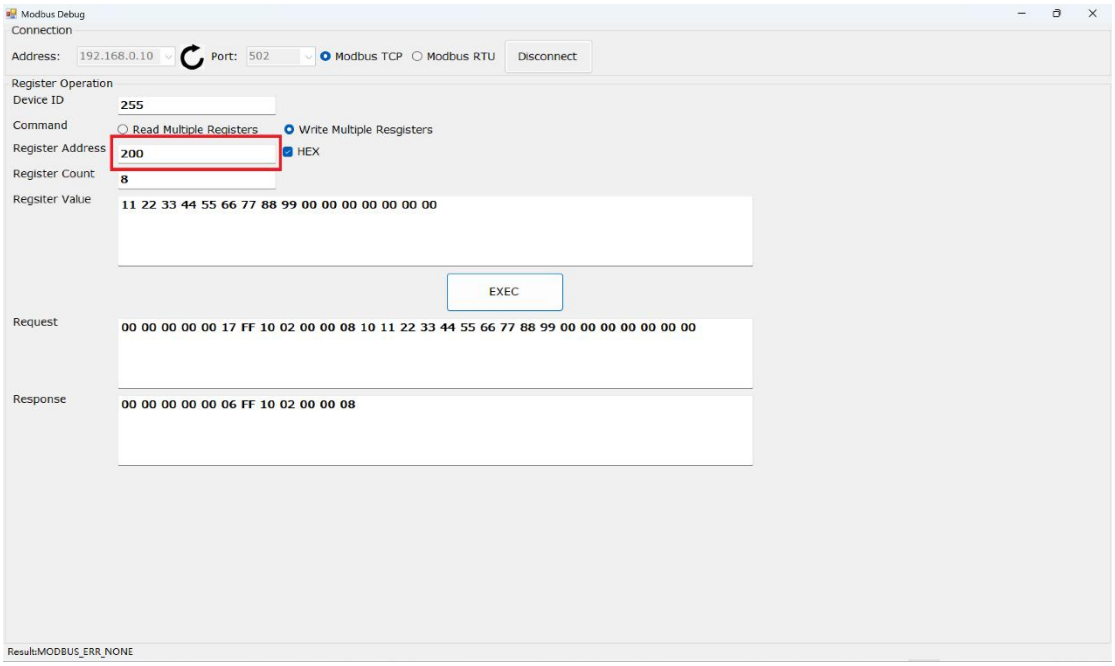
below:

- Device ID – Read/Write Head ID: 0 (Under Modbus TCP protocol, this ID is not required; under Modbus RTU protocol, it is the slave ID of the read/write head, default is 1);
- Register Address – Starting register address: 0; (If you want to write to a different antenna, you need to change this starting address to the corresponding antenna's starting address)
- Register Count – Number of registers: 8;
- Register Value – Value to be written to the register: XXXX;
- Request – Request data frame: XXXX;
- Response – Response data frame: XXXX;

Antenna 2 USER DATA Area Data Write Test

Under the "Register Operation" section, set the read/write head ID ("Device ID"), the starting register address ("Register Address"), and the number of registers ("Register Count"). Then, enter the value to be written to the registers in the "Register Value" field, and click the "EXEC" button to

perform the register write test, as shown below:



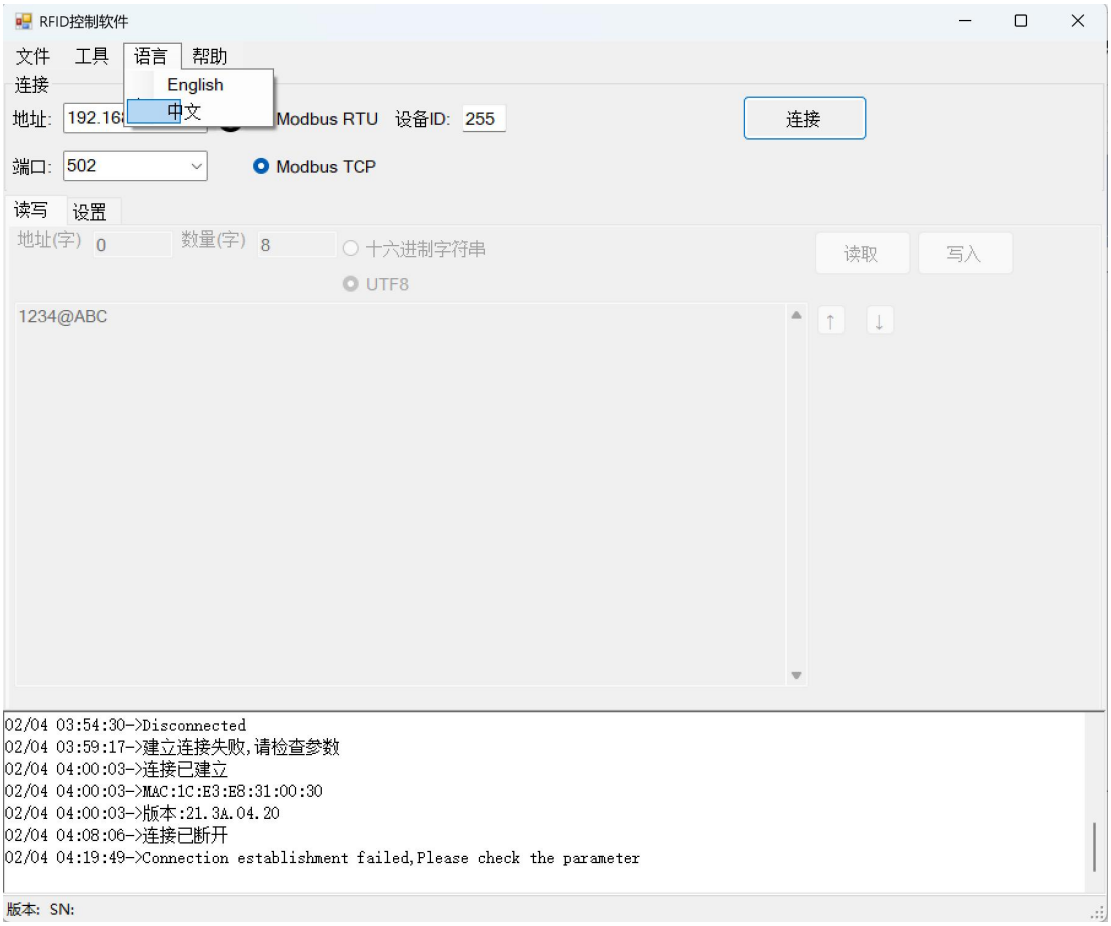
3.5 Read/Write Head Upgrade Function

This function is a developer option and is not currently available to customers.

3.6 Language Switching Function

Click on the "Language" tab, and then select "Chinese" from the options to switch the RFID Controller Demo software to Chinese mode, as shown in the image

below:



3.7 Help

Click on the "Help" tab and select "About" from the options to view the API and software version details of the RFID Controller Demo software, as shown in the image

below:

