



RS-RL863 User Manual

Multi-Protocol Desktop HF RFID Reader

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1. Product Overview

1.1 Product Introduction

The RS-RL863 Reader complies with ISO 15693, ISO 18000-3M3, ISO 14443A and ISO 14443B protocol standards. It features high-sensitivity read/write performance and a fast anti-collision algorithm, supporting simultaneous reading of tags from different protocols. Applications include desktop card issuance, access control, e-ticketing, library systems, and financial services.

1.2 Product Features

- Operating frequency: 13.56 MHz
- Supported protocols: ISO 15693, ISO 18000-3M3, ISO 14443A, ISO 14443B
- Supports simultaneous multi-card reading for ISO 14443A, ISO 14443B, ISO 15693, and ISO 18000-3M3 (including zero-distance overlapping tag reading for ISO 18000-3M3)
- Reading distance: approx. 0-16 cm
- Communication interface: USB
- Power supply: USB 5V

1.3 Product Model



RS-RL863

1.4 Main Parameter

Parameter		Description
OperatingFrequency		13.56 MHz
Support Standard		ISO 15693, ISO 18000-3M3, ISO 14443A and ISO 14443B
Recognition Distance	ISO 15693	16 cm
	ISO 14443A	10 cm
	ISO 14443B	10 cm
	ISO 18000-3M3	6 cm
Communication Interface		USB
Voltage		5V (USB powered)
Maximum Power		0.65 W
StandardSizes		105 × 70 × 10 mm
Maximum Operating Temperature		35°C

Description of main technical parameters of the product

Tips:

- ① Product specifications are approximate, please refer to the actual size;
- ② Due to continuous improvement of our products, technical parameters are subject to change without notice.

2. Hardware Interface

The product uses USB communication interface, as shown in the following figure:



Figure 1 Communication interface

3. Product Dimensions

The external dimensions of the product are shown in the following figure (unit: mm):

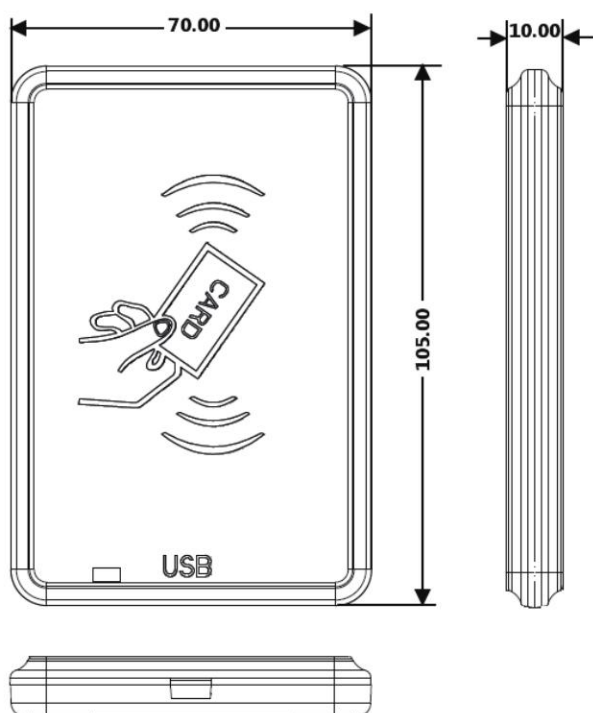


Figure 2 Product dimension

4. Device Connection

Before using the reader, connect the reader to the computer with the supplied "USB cable", as shown in the following figure:

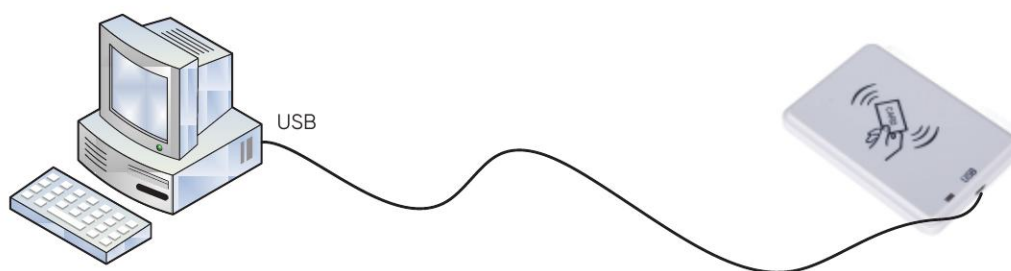


Figure 3 Connection diagram

5. Configuration Tool Instructions

After the device is connected and powered on normally, open the R-Tool folder of the configuration tool and find the file  in the folder directory. Double-click this file to open the configuration tool, as shown below:

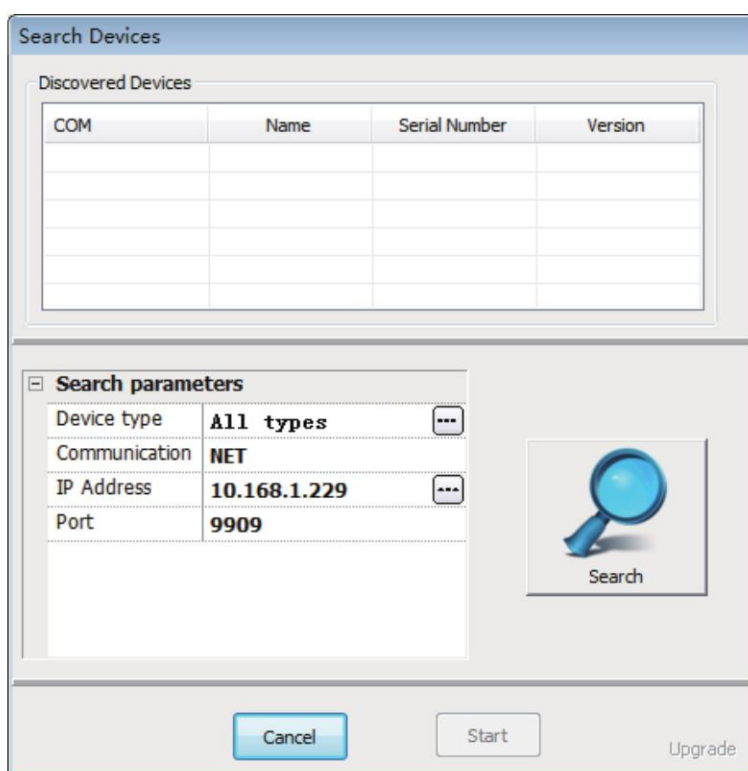


Figure 4 R-Tool connection interface

Select the corresponding communication method according to the actual interface type used by the device.

Since the communication interface of the device is a USB interface, select "USB Communication" in [Communication Interface] under [Search Parameters]. click the [Search] button to find the device. When the device is found, the device information will be automatically displayed in the "Discovered Devices" list as follows:

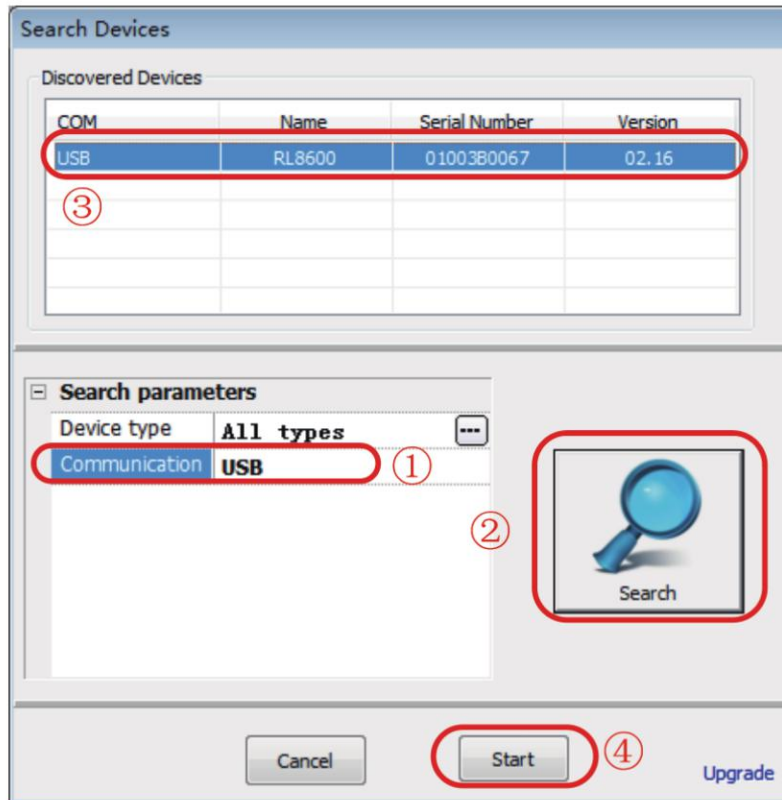


Figure 5 Connection steps

As shown above (Step ④), click the "Start" button to enter the main interface of the test software.

5.1 Configuration Parameters

5.1.1 Communication Interface

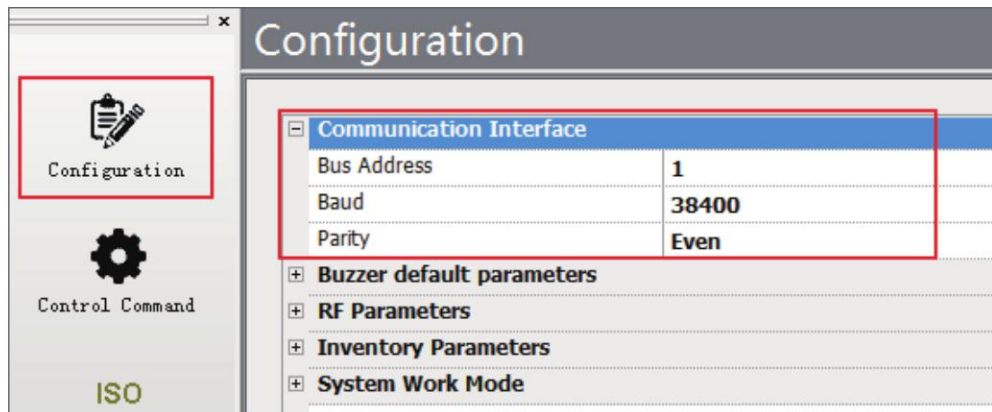


Figure 6 Configuration interface for communication interface

- Bus Address: 1-255
- Baud Rate: 9600 / 19200 / 38400 / 57600 / 115200 / 230400
- Parity: None, Odd, Even

5.1.2 Buzzer Default Parameters

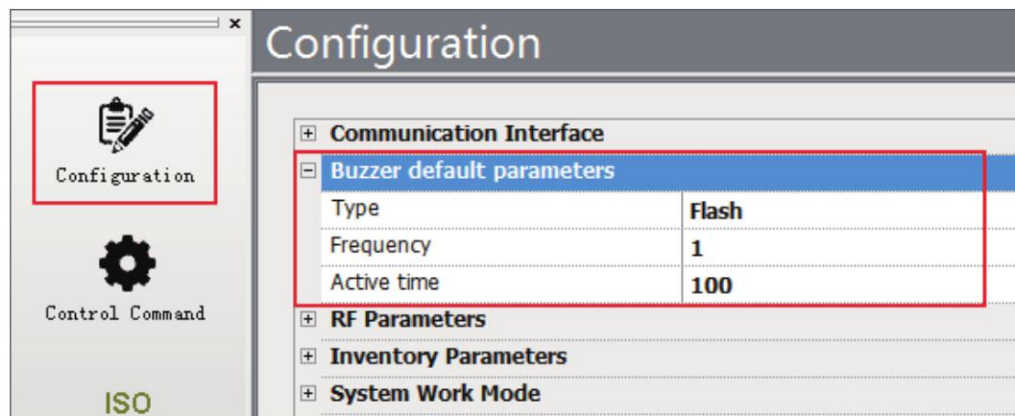


Figure 7 Configuration interface for buzzer default parameters

- Type: Unchanged / On / Off / Flash
- Frequency: 0-255 (for Flash type only)
- Duration: Time interval for Flash beeps

5.1.3 RF Parameters

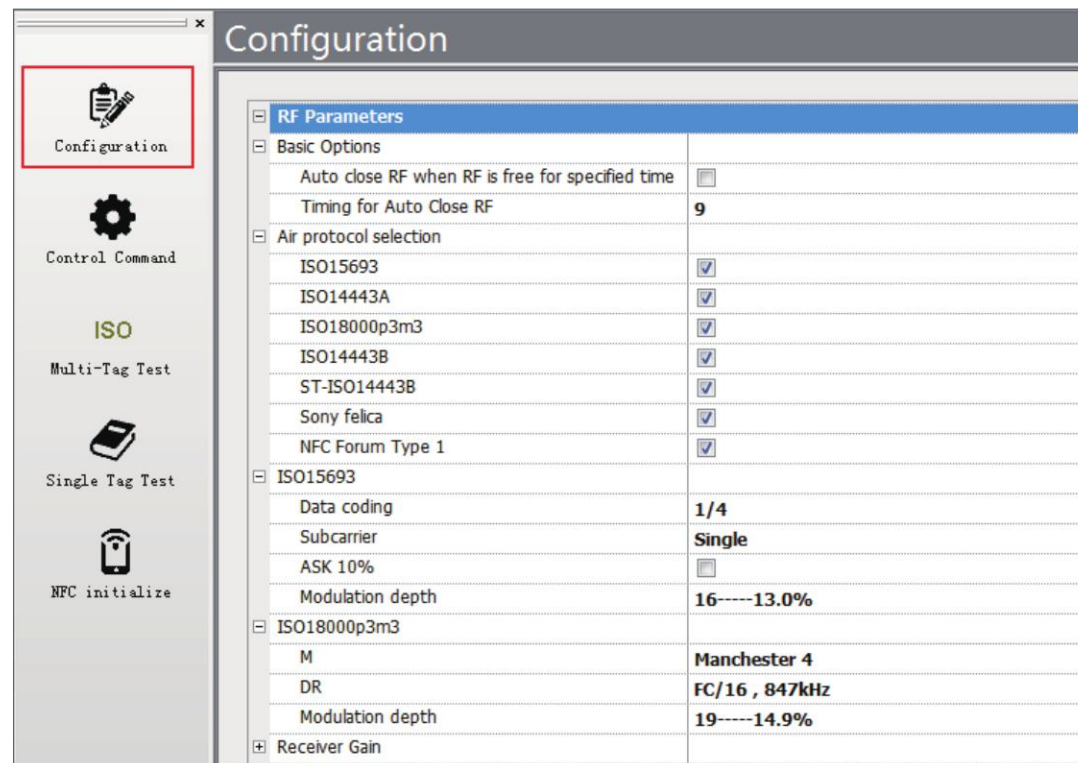


Figure 8 Configuration interface for RF parameters

Basic options

1) Auto close RF when RF is free for specified time: In the host control mode, the device will automatically close the RF if it does not receive a command of card reading or opening the RF.

2) Timing for Auto Close RF: Value range: 0-256, the RF enters the idle mode if no operation in a specified time.

Air protocol selection

1) ISO 15693: Enable to count tags of ISO 15693 air protocol.

2) ISO 14443A: Enable to count tags of ISO 14443A air protocol.

3) ISO 18000-3M3: Enable to count tags of ISO 18000-3M3 air protocol.

4) ISO 14443B: Enable to count tags of ISO 14443B air protocol.

ISO 15693

- 1) Data coding: 1/4, 1/256.
- 2) Subcarrier: single negative carrier, double negative carrier.
- 3) ASK 10%: ASK modulation depth setting takes effect after the button is ticked. Otherwise, it is ASK 100%.
- 4) ASK modulation depth: 0.5%-60%

ISO 18000-3M3

- 1) M: Manchester 2, Manchester 4
- 2) DR: FC/16847khz, FC/32424khz
- 3) Modulation depth: 0.5%-29%

5.1.4 Inventory Parameters

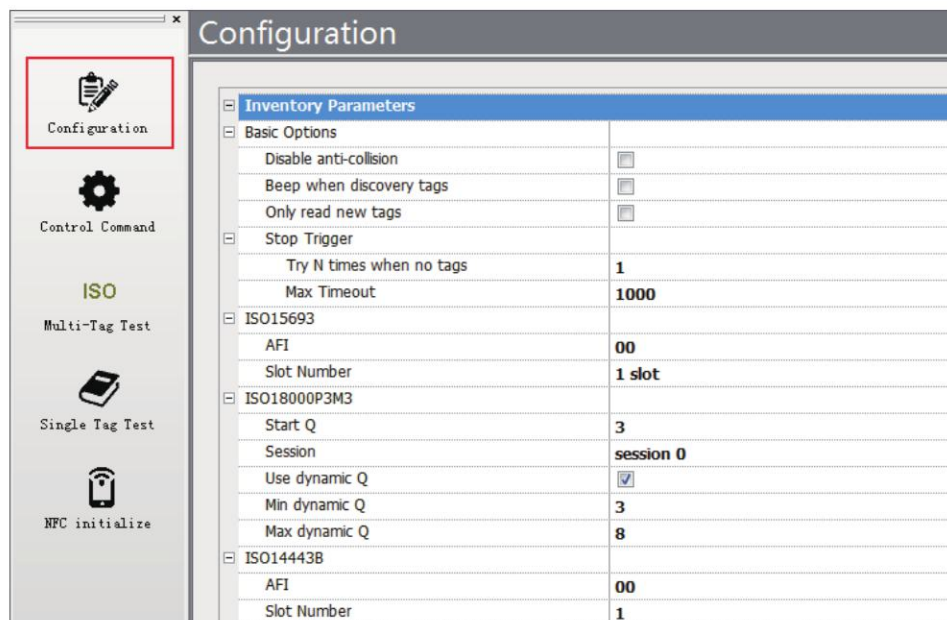


Figure 9 Configuration interface for inventory parameters

Basic options

- 1) Disable anti-collision: whether to turn off anti-collision function.
- 2) Beep when discovery tags: set whether the buzzer buzzes when the tag is detected.
- 3) Only read new tags: each tag is only read once, when it does not leave the antenna sensing area.
- 4) Stop Trigger
Try N times when no tags: set the number of attempts if no new tags are found.
Max Timeout: set the time of stopping trigger due to timeout.

ISO 15693

- 1) AFI: 00-FF.Note: 00 means not to enable.
- 2)Slot Number: 1 Slot, 16 Slot.

ISO 18000-3M3

- 1) Start Q:0-15.
- 2) Session: session 0, session 2.
- 3) Use dynamic Q:whether to enable dynamic Q value.
- 4) Min dynamic Q: set the minimum dynamic Q value.
- 5) Max dynamic Q: set the maximum dynamic Q value.

ISO 14443B

- 1) AFI: 00-FF.Note: 00 means not to enable.
- 2) Slot Number: 1,2,4,8,16.

5.1.5 System Work Mode

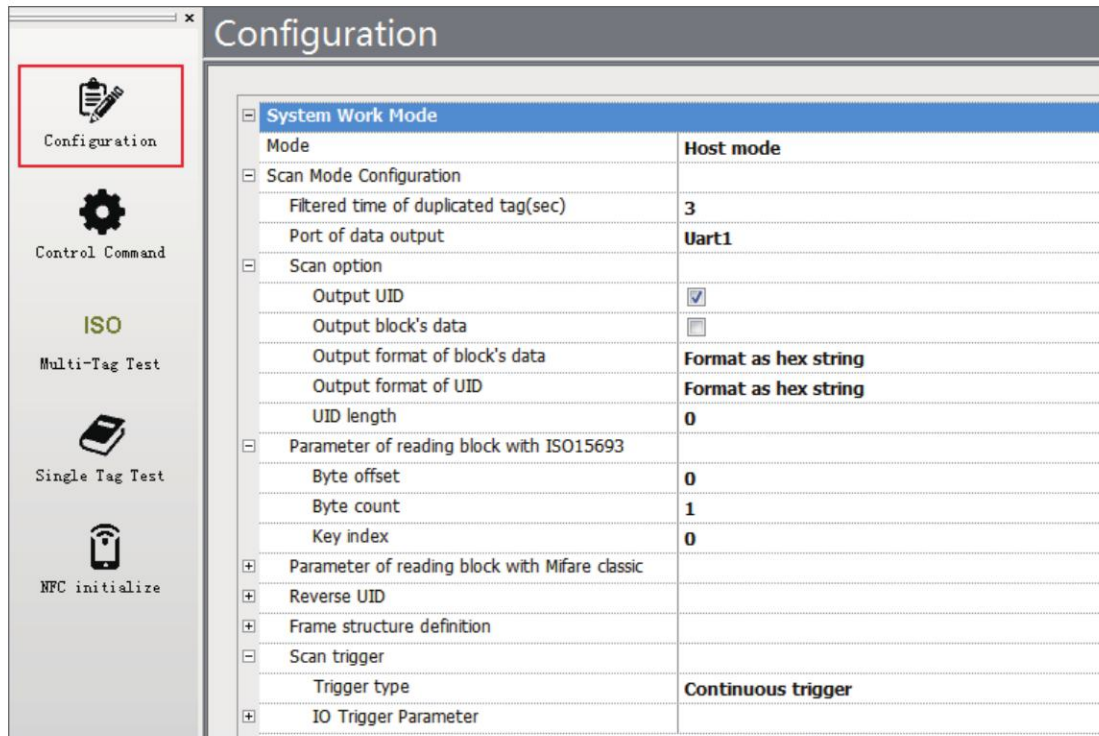


Figure 10 Configuration interface for system work mode

Mode:

- 1) Host mode: the host software needs to send commands.
- 2) Scan mode: the inventory can be automatically completed, even if the host software does not send commands; scan setting in the scan mode should be configured in advance.

Scan Mode Configuration:

- 1) Filtered time of duplicated tag(sec): The tag can only be counted again after leaving the specified time.
- 2) Port of data output: Uart1 output, USBHID output, virtual keyboard output, Wiegand 26, Wiegand 34.
- 3) Scan option
 - ① Output UID: output the tag UID.
 - ② Output block's data: output the content of the data block (not including the security status byte).
 - ③ Output format of block's data:

- A. Format as hex string.
- B. Format as ASCII.
- ④ Output format of UID:
 - A. Format as hex string.
 - B. Format as LSB 3 bytes convert to integer string.
 - C. Format as LSB 4 bytes convert to integer string.
 - D. Format as compliant with Wiegand.
 - E. Format as compliant with Wiegand fix 8 bytes.
- ⑤ UID length: 0-8, 0 for unlimited length, output of a complete UID.

4) Parameter of reading block with ISO 15693
 Byte offset: The offset of the first byte to be read.
 Byte count: The number of bytes to be read.

Note: The above configuration is a common configuration, if you need to set other configuration information, please consult our engineers to configure.

5.2 Device Testing

5.2.1 Multi-Tag Test

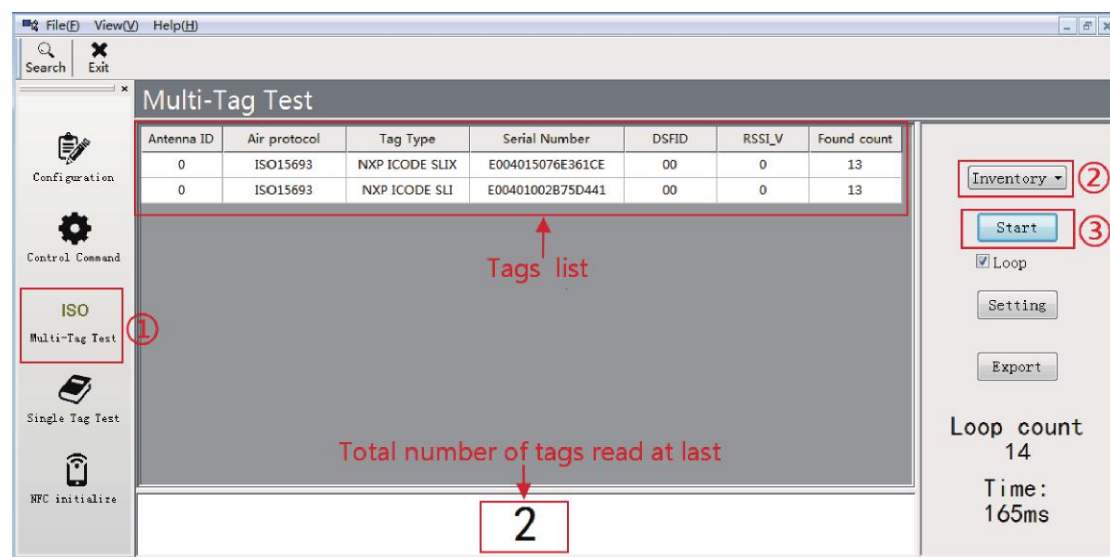


Figure 11 Multi-Tag inventory test steps

After entering the main interface of R-Tool test software, select "ISO Multi-Tag Test", carry out the procedure as shown in the following figure ①, ② and ③ for tags inventory test:

Note:

Step 1: Select the menu "ISO Multi-Tag Test" in the main interface of the software;

Step 2: Select the "Inventory" in the drop-down list above the "Start" button;

Step 3: Click the "Start" button to carry out the inventory testing.

5.2.2 Single-Tag Test

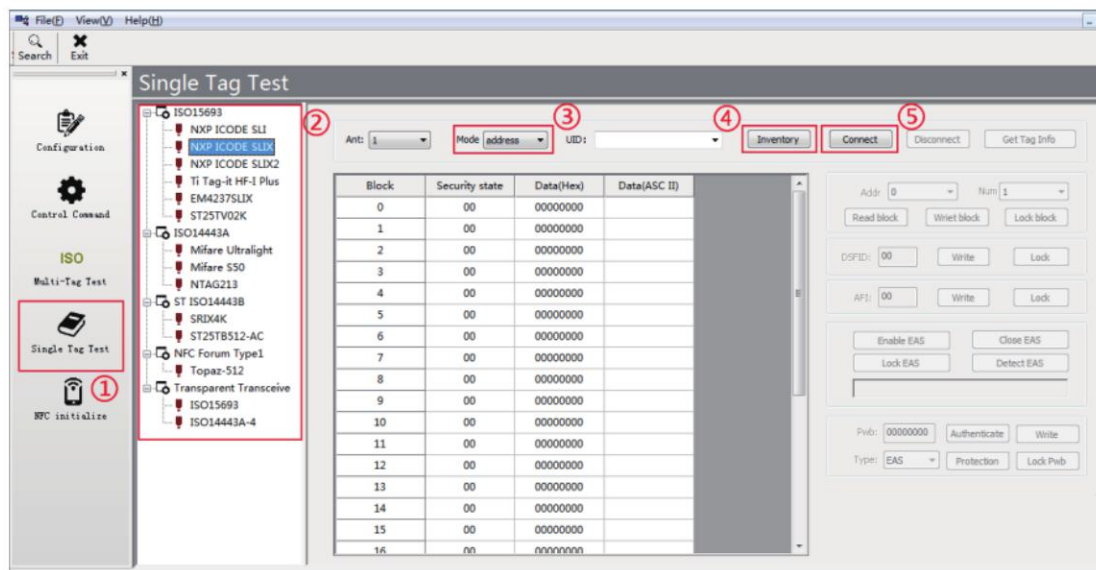


Figure 12 Single tag operation test steps

After entering the main interface of R-Tool test software, select "Single Tag Test", carry out the procedure as shown in the following figure ①,②,③,④ and ⑤ for tags test:

Note:

Step 1: In the software main interface, select the menu "Single Tag Test";

Step 2: In the "Single Tag Test" interface, select the type of tag to be operated;

Step 3: mode: none address, address.

- 1) For a single tag, select the "none address" mode.
- 2) For multiple tags, select the "address" mode.

Step 4: Click the "Inventory" button to display the UID list in UID drop-down box.

Step 5: 1) For a single tag: click the "Connect" button;

2) For multiple tags: in UID drop-down box, select the tags required to be operated, and then click the "Connect" button;

After the above steps, you can read and write tags, as shown below:

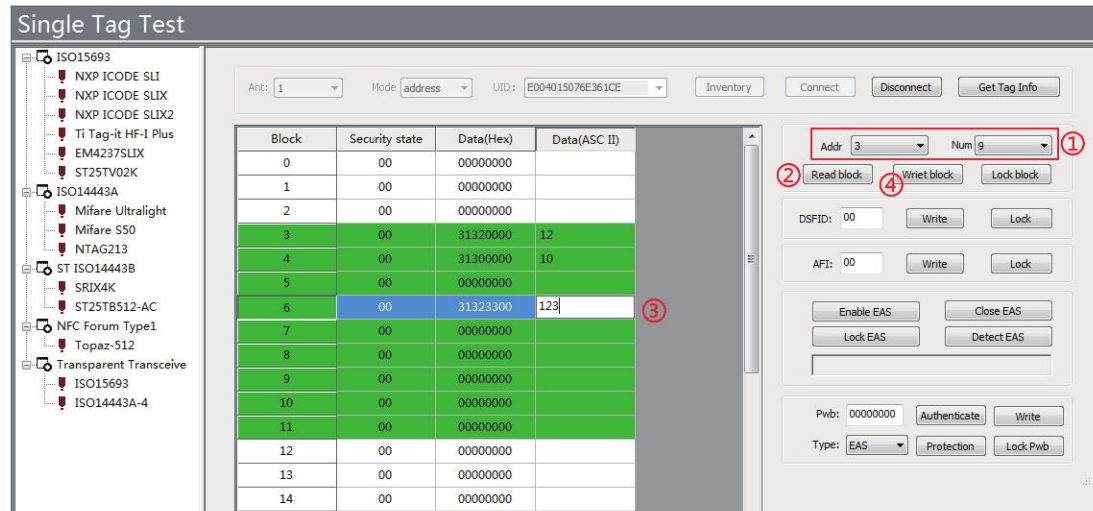
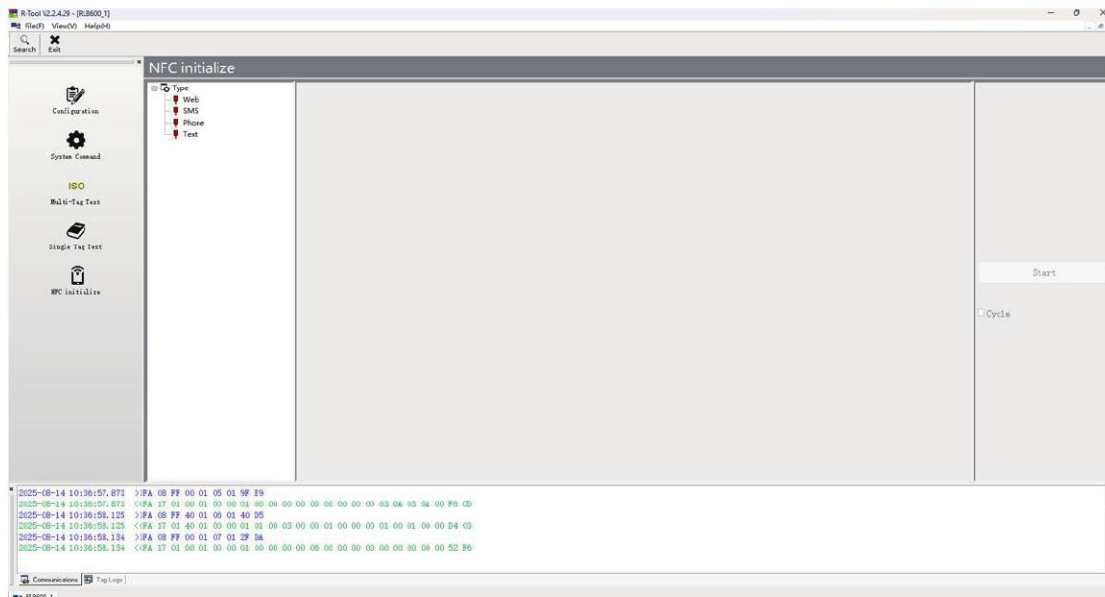


Figure 13 Single tag reading and writing steps

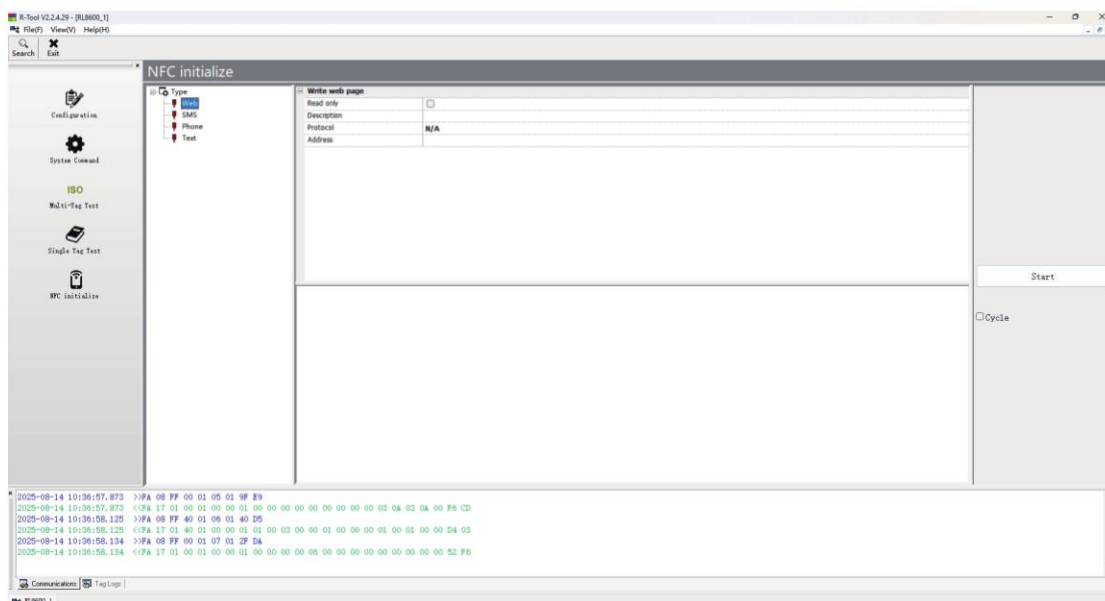
Steps:

- 1) Set the data block of the tag to be operated in the Addr drop-down box and the Num drop-down box. After setting, the operable data block is displayed in green indicating that it can be operated;
- 2) Click [Read Block] to read the data value of the data block selected in step 1;
- 3) Write the value in the line (green area) of the data block whose value should be written, and then click [Write Block];
- 4) After the operation is completed, click the [Disconnect] button to disconnect the tag connection.

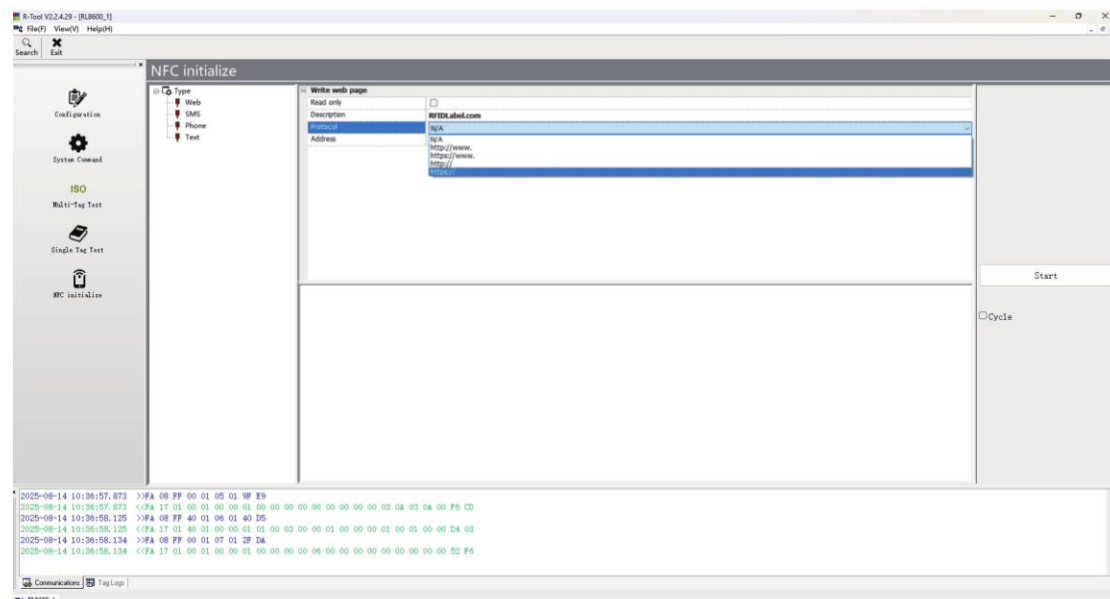
6. How to Write a URL



Select the "NFC Initialization" option from the left sidebar. This module will help us set up and write content to the NFC label.



In the "NFC Initialization" screen, first select "Web" as the type. Then, in the 'Protocol' field, select the URL type, and fill in the relevant information in the 'Description' and 'Address' fields to ensure the settings are correct.



Place the NFC label near the RFID reader. Click the "Start" button, and the software will begin writing the URL to the NFC label. After the write is successful, the system interface will display the UID of the label that has been successfully written.

7. Troubleshooting

1. The indicator of the reader is off:

Failure analysis:

- 1) There is a problem or poor contact in the reader's communication interface;
- 2) The reader indicator is broken.

Troubleshooting method: reconnect the reader or change a USB cable to connect the reader:

- 1) The indicator is off and the reader does not work. It may be the reader MCU failure;
- 2) The reader can read normally, but the light is still off, it may be the reader indicator is broken.

2. The reader works but the tag cannot be read normally:

Failure analysis:

- 1) The tag is damaged;

2) The performance of the antenna board is unstable or the device has poor contact.

Troubleshooting method:

Please check whether the tag is damaged, and take another tag to test. If the new tag can be read normally, it means that the tag is damaged; if the tag still cannot be read, the MCU or antenna of the reader may be faulty. Please contact our company to discuss maintenance matters.

● **Performance and Illustrations:** Graphs and visuals are for reference only; actual product performance may vary depending on usage and environment. ● **Storage and Handling Guidelines:** Follow standard ESD-safe storage and handling procedures to maintain product integrity and avoid damage. ● **Product Updates and Revisions** rfidbridge.com may change products, specs, or services at any time without prior notice. ● **General Use Disclaimer:** Products are for general-purpose use and not intended for safety-critical or life-support applications. ● **Legal Notice:** Information is believed accurate but may change. rfidbridge.com is not liable for use-related issues or outcomes.



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