RL863 Micro-power Multi-protocol Reader

User Manual

Contents

1. Product Overview

1.1. Introduction

This product complies with ISO 15693, ISO 18000-3M3 and ISO 14443A protocol standards, it has high sensitivity reading and writing performance and fast anti-collision processing algorithm which supports reading electronic tags of each protocol at the same time.

This product is widely used in desktop card issuance, access control systems, electronic bills, libraries, finance and other fields.

1.2. Product Features

➢ Operating frequency: 13.56MHz;

➢ Support ISO 15693,ISO 18000-3M3 and ISO 14443A standard;

➢ Support ISO 14443A protocol multi-card simultaneous reading;

➢ Support ISO 15693 protocol multi-card simultaneous reading;

➢ Support ISO 18000-3M3 protocol multi-card simultaneous reading;(Support zero distance overlap reading of tags);

➢ Recognition distance：0~16cm;

➢ Communication interface:USB；

➢ Power supply:USB 5V。

1.3. Pictures

RL863

1.4. Main Parameter

Table 1   Description of main technical parameters of the product

Parameter		Description
Operating Frequency		13.56MHz
Support Standard		ISO 15693、ISO 18000-3M3 and ISO 14443A
Recognition Distance	ISO 15693	16 cm
	ISO14443A	10 cm
	ISO 18000-3M3	6 cm
Communication Interface		USB
Voltage		5V（USB powered）
Maximum Power		0.65W
Standard Sizes		105×70×10mm
Maximum Operating Temperature		35℃

ⓘ 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 Description

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

Figure 1   Communication interface

3.   Product Dimension

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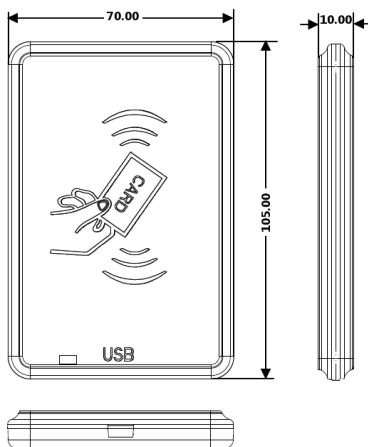

Figure 2   Product dimension

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.   Instructions Of Configuration Tools

After the device is connected and powered on normally, open the R-Tool folder of the configuration tool and find the file ▦ R-Tool in the folder directory. Double-click this file to open the configuration tool, as shown below:
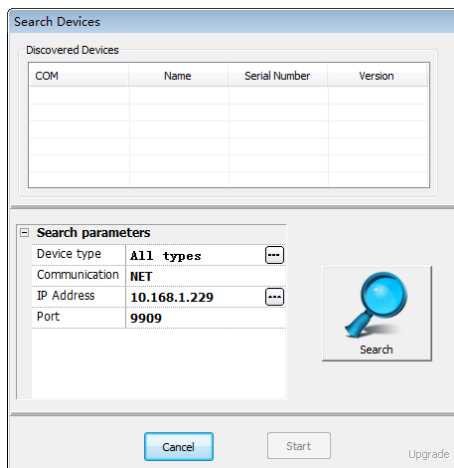
Figure 4   R-Tool connection interface

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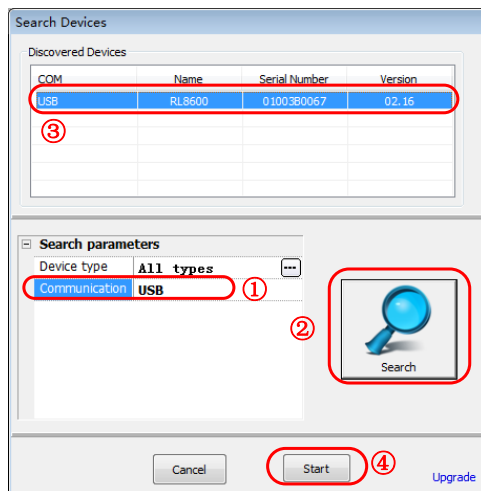
As shown above (Step ④), click the "Start" button to enter the main interface of the test software.

5.1. Configuration Description Of Parameters
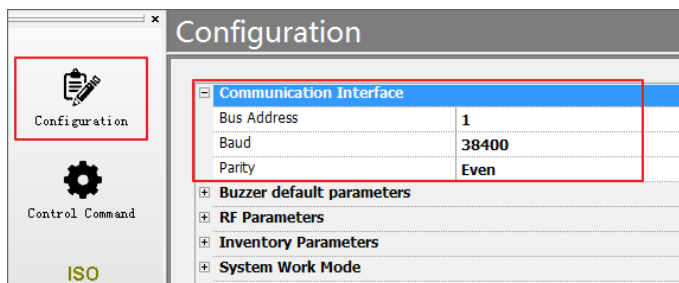
5.1.1. Communication Interface

Figure 6   Configuration interface for communication interface

- **Bus address:** between 1-255
- **Baud Rate:** 9600, 19200, 38400, 57600, 115200, 230400
- **Parity check type:** None, Odd, Even

5.1.2. Buzzer Default Parameters
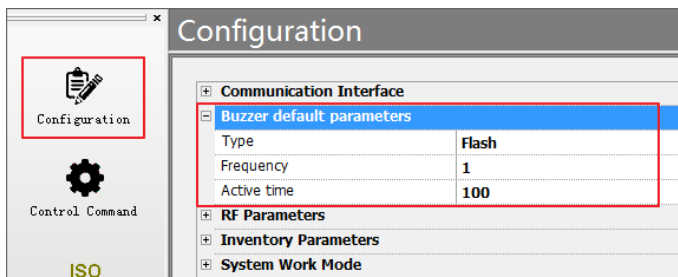
Figure 7   Configuration interface for buzzer default parameters

- **Type:** Unchanged, On, Off, Flash.
- **Frequency:** value range from 0 to 255, only applicable for the Flash type.
- **Active time:** the frequency of buzzer, only applicable for the Flash type.

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**

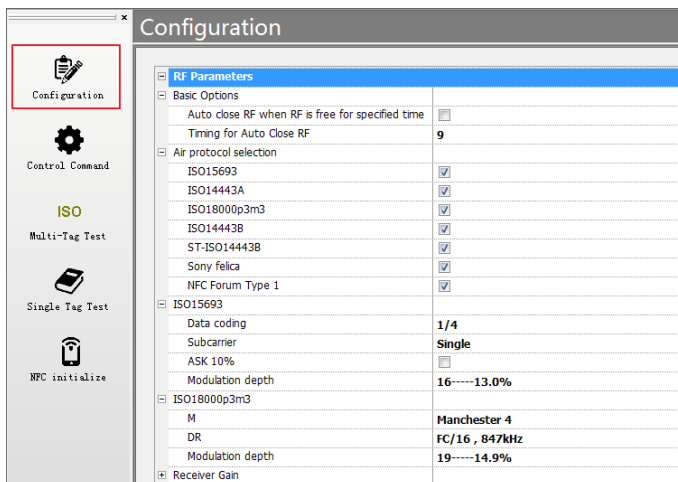 1) ISO15693: Enable to count tags of ISO15693 air protocol.

  2) ISO14443A: Enable to count tags of ISO14443A air protocol.

  3) ISO18000p3m3: Enable to count tags of ISO18000p3m3 air protocol.

  4) ISO14443B: Enable to count tags of ISO14443B air protocol.

- **ISO15693**

  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%

- **ISO18000p3m3**

  1)M: Manchester 2,Manchester 4

  2) DR:FC/16847khz, FC/32424khz

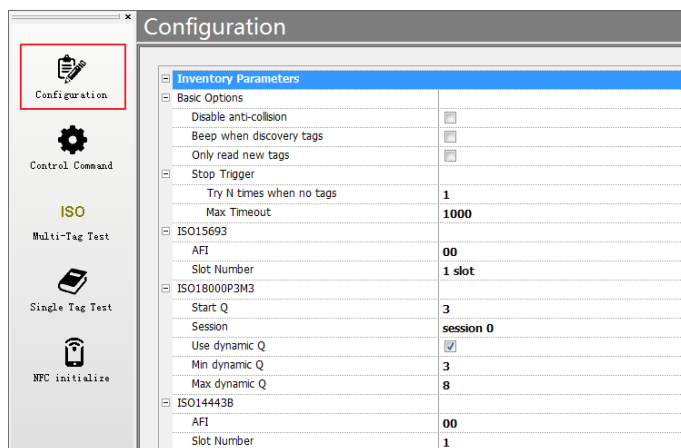 3) Modulation depth:0.5%-29%

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.

- **ISO15693**

    1) AFI: 00-FF.Note: 00 means not to enable.

    2)Slot Number: 1 Slot, 16 Slot.

- **ISO18000p3m3**

    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.

- **ISO14443B**

    1) AFI: 00-FF.Note: 00 means not to enable.

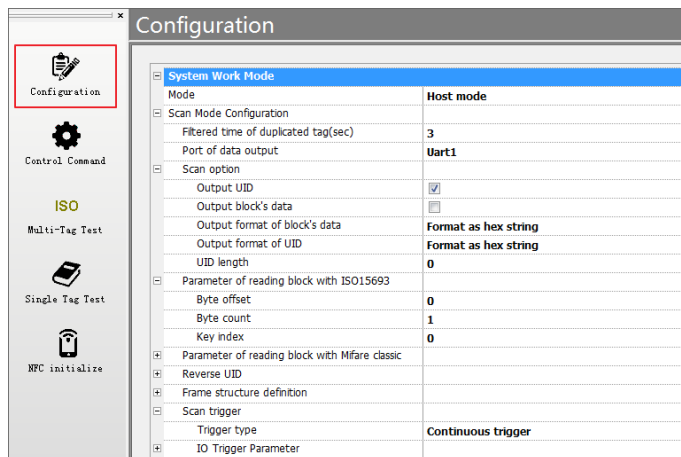   2) Slot Number: 1,2,4,8,16.

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 ISO15693

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. Testing

5.2.1. Multi-tags Inventory Testing

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:
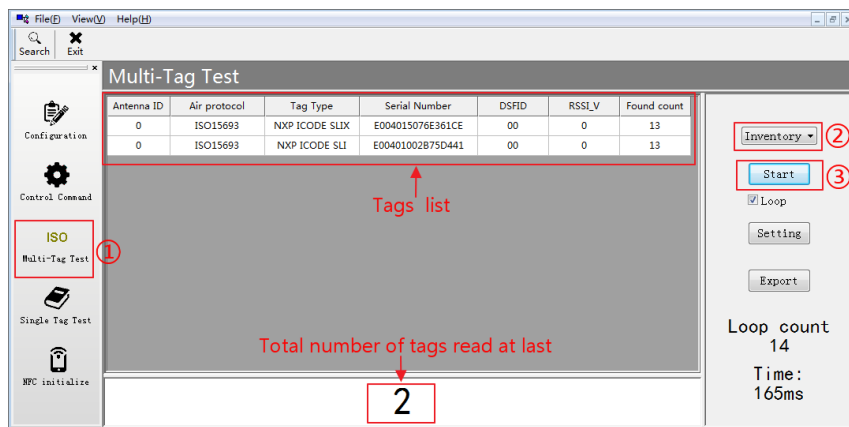

Figure 11 Multi-Tag inventory test steps

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 Operation Testing

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:
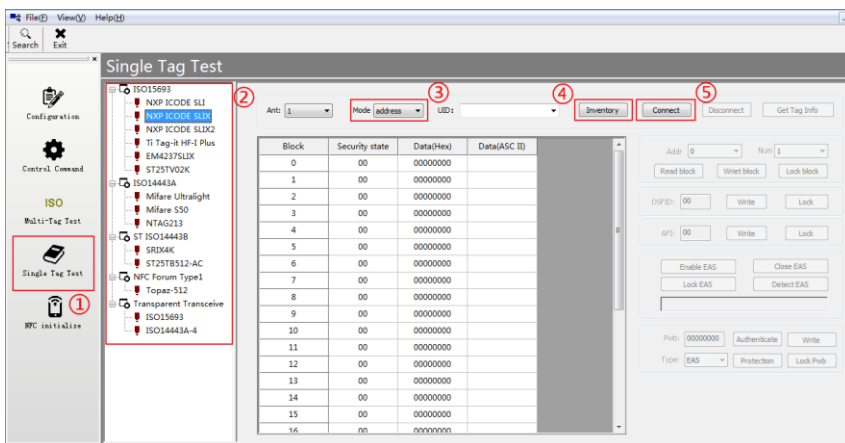

Figure 12 Single tag operation test steps

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;

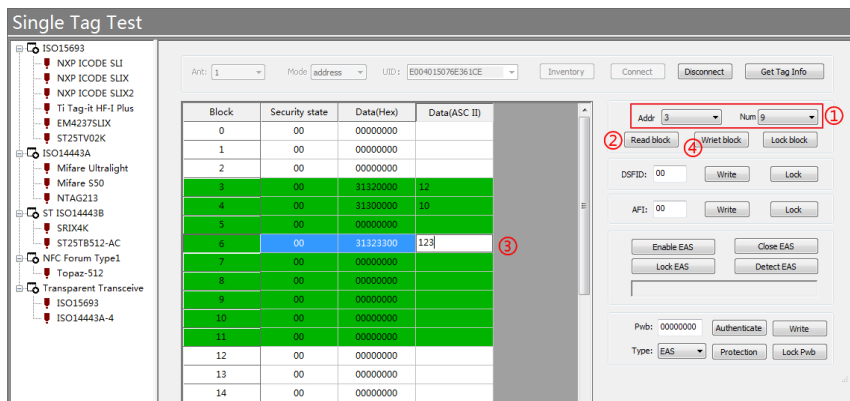After the above steps, you can read and write tags, as shown below:

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. Troubleshooting Of FAQs

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;

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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.

7. Technical Support

➢ **Download link for development data and testing**

https://www.gzandea.com/download.php

➢ **Call for equipment debugging and technical support**

Mobile phone: 138 0251 4535
Fixed telephone: 020-32039552

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

NOTE: 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.

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