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04/10/2022 V 1.0

ISBC UHF DR 102 BLE
User Manual V1.0

Catalog

Chapter 1：Product Introduction

" ISBC UHF DR 102 BLE. User manual " gives a detailed introduction and description of ISBC UHF DR 102 BLE reader's product characteristics, technical parameters, interface definition, installation and connection mode and software operation guidance, so as to facilitate users to quickly complete the construction of UHF RFID test and evaluation platform. If users have further requirements for software secondary development, they shall read related API instructions, EPC global Gen2 protocol and communication protocol in combination.

1.1 Product Features

ISBC UHF SLR 1104 features compact and lightweight shape design, Bluetooth 2.0 data communication. The collected data can be easily accessed to the user's Android terminal and is easy to install and deploy. It is very suitable for mobile portable applications and can meet the requirements of various applications such as retail, supply chain, manufacturing, and asset management.

Key features:

- Designed for portable mobile applications, collection and operating system separate design, flexible to adapt to different Android terminals;
- Ergonomic shape design, to provide users with comfortable experience;
- Support ISO 18000-6C/EPC Gen2 standard protocol;
- Support Bluetooth2.0 data communication;
- Output power 15 - 26 dBm software adjustable;
- Moderate reading performance, can realize more than 2.5 meters tag recognition;
- Excellent anti-collision algorithm, recognition rate is about 30 – 60 pcs/s;
- Low power consumption design, long battery life and stand by sleep time.

1.2 Technical Parameters

Table 1 Technical parameter

RFID Features	
RF protocol	EPC global Gen2(ISO 18000-6C)
Working frequency	China: 920-925MHz (SRRC) America: 902-928MHz (FCC part 15) Europe: 865-868MHz (ETSI EN 302 208) 840-960MHz: Can be customized according to needs and local status
Transmitted power	15 - 26dBm software adjustable
Duration of flight	Working time - 5h, long standby sleep time
Power supply mode	BL-5C lithium battery, 1150mAh capacity, removable battery design
Charge mode	Micro USB charging, 5V/1A
LED indicators	Include power, Bluetooth status, scanning status, charging status and other indicators
Communication mode	Bluetooth Communicator
Rate of reading	30 ~60pcs/s
Reading distance	0 - 2.5 m, the reading distance varies with the tag model
Secondary development	Android development support
Physical Properties	
Outfit	ABS
Size	153 *60 * 33 mm
Weight	150g
Color	Black-and-white
Working Ambient	
Working temperature	-25℃ ~ +60℃
Storage temperature	-30℃ ~ +80℃
Working humidity	5% ~ 95%RH
Application	Indoor

1.3 Product size

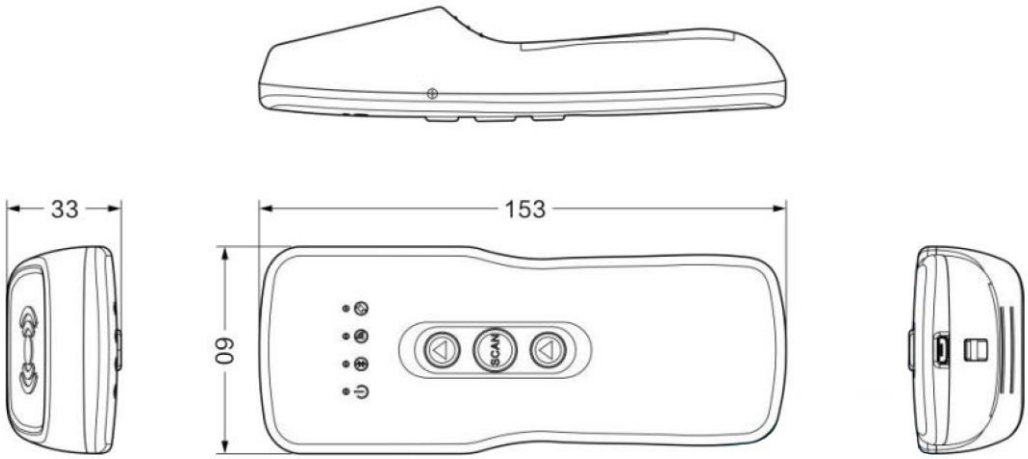

Figure 1 Dimension Figure (Unit: mm)

1.4 Interaction interface

The ISBC UHF DR 102 BLE reader has the following interaction interfaces:

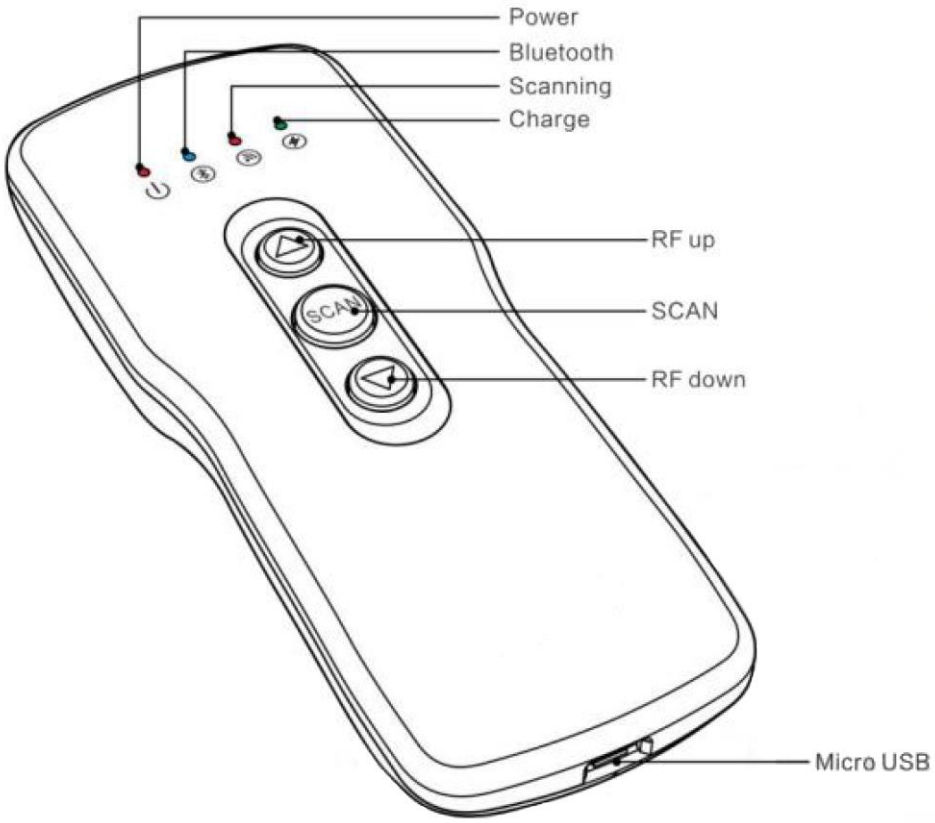

Figure 2 Schematic diagram of the interaction interface

- Communication interface: Bluetooth V2.0 communication interface;
- Charging interface: Micro USB, 5V/1A adapter;
- Scan button: 1 scan main key, 2 power increase/decrease adjustment keys;
- LED indicator: Power, Bluetooth, Scanning, charge indicator;

1.4.1 Reader Status

The device has the following states:

Dormant state: In sleep state, all working modules of the device will enter the low-power mode, at this time, the Scan key will be triggered to exit the sleep state and enter the state to be connected;

Bluetooth to be connected: When the device is Bluetooth to be connected, the Bluetooth status indicator light flashes. Pressing the Scan button frequently will prevent uploads to the Android mobile terminal. Bluetooth connected status:

Bluetooth connected status: After the Bluetooth connection is established, the Bluetooth status indicator is always on. Press the Scan button frequently, and the data will be uploaded to the Android mobile terminal through Bluetooth.

1.4.2 Reader buttons

The DR 102 BLE reader has two power adjustment keys and Scan keys, and the functions are as follows:

The Scan button has wake-up function and scan function:

Press the Scan button in the sleep state to wake up the HBT100. At this time, the red power indicator lights up and the buzzer sounds "Di Di Di" The equipment starts normally;

Long press the Scan key in the connected state. If the device does not read the tag, the red light of the scan indicator is always on, indicating that there is a key to press. If the device reads the tag, the green light of the scan indicator flashes;

The power adjustment key has the function of adjusting power:

Power up key: the power can be increased by 1dBm step, if the highest power has been reached, the device will have a prompt sound;

The power can be reduced by 1dBm step, if the lowest power has been reached, the device has a prompt sound.

Figure 3 Serial interface diagram

1.4.3 Status indicator light

LED indicator light from left to right is power status indicator light, Bluetooth status indicator light, scanning status indicator light, charging status indicator light, the functions of the indicator light are as follows:

Power status indicator:

Indicator is red: device is powered on.

Indicator light is not lit: device is dormant.

Bluetooth status indicator

Indicator flashes blue: device is powered on and Bluetooth is not connected.

Indicator light is blue and not flashes: device is powered on and Bluetooth is connected.

Indicator light is not lit: device is not powered on.

Scan status indicator:

When the Scan button is pressed:

Indicator light is always red: not identified tag.

Indicator light flashes green: identified tag.

Charging state indicator light:

Indicator light is not lit: in the state of uncharging

Indicator light is always red: Charge but not full.

Indicator light is always green: Charge and full.

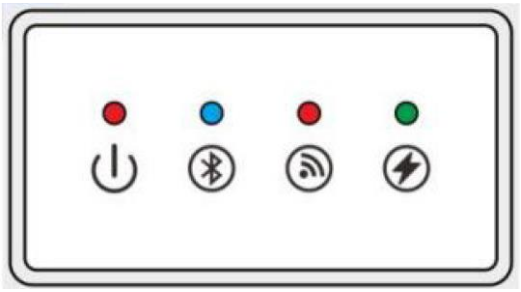

Figure 4 Schematic diagram of indicator light

1.4.4 Battery management

The diagram of battery installation and removal is as follows:

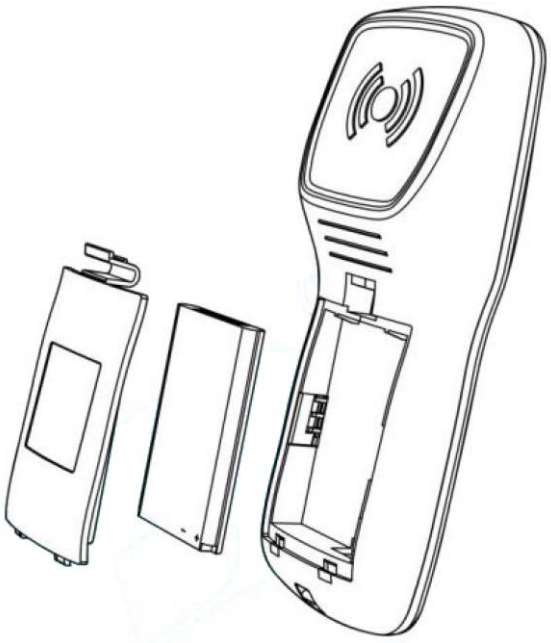

Figure 5 Schematic diagram of battery installation and disassembly

Precautions for battery use:

When the battery power is less than 20%, the buzzer will "beep" short low battery prompt sound, at this time the user needs to charge in time.

When the battery power is lower than 5%, the device automatically shuts down and the user needs to charge in time.

Battery replaceable design, the default model is BL-5C, users can purchase the same specifications of the genuine manufacturer's battery in the general market.

When the device has not been used for a long time (e.g., more than 1 month), it is recommended that the user charge the battery to 50% or more before removing it for storage.

Chapter 2：DR 102 BLE Scanner Demo software introduction

DR 102 BLE Scanner Demo software is designed for the demonstration test of DR 102 BLE Bluetooth handheld reader. It is a client software developed on the basis of the Android system platform. The software has the functions of Bluetooth connection, tag inventory, chip type judgment, device parameter setting, tag read, tag write, tag lock, tag erase, tag inactivate and soon. Is a fully functional Android RFID demo test software.

2.1 DR 102 BLE Scanner Demo Software Installation

2.1.1 Software operating environment

RFID Scanner Demo software installation needs to meet the following conditions:

Software running hardware environment for android platform smart mobile terminals, such as mobile phones, tablets, etc.

Software operation requires android 4.0 or above, lower versions may lead to system incompatibility.

2.1.2 Software installation process

Import the DR 102 BLE Scanner Demo Software installation files to the smart mobile terminal of the android system platform.

Install software installation files as prompted until installation is complete.

2.2 DR 102 BLE Scanner Operating

2.2.1 Open the software

Click the " DR 102 BLE Scanner " icon on the desktop of the mobile phone to enter the software interface.

2.2.2 Open the software

When the DR 102 BLE is in the low-power sleep state, user can press the "SCAN" button to trigger the device to enter the Bluetooth to be connected state. At this time, the power status indicator of the device is lit, and the Bluetooth connection status light is flashing.

Can establish Bluetooth connection with DR 102 BLE through Android mobile terminals (such as mobile phones and tablets, the same below). The steps are as follows:

- Click Connect Bluetooth in the RFID Scanner Demo software interface.
- Click Query device, find the DR 102 BLE -3731 Reader and click Connect;
- If the device is connected for the first time, the left display interface of Figure 6 appears, and the Pin code is 6789. Enter the connection password and click OK to connect.

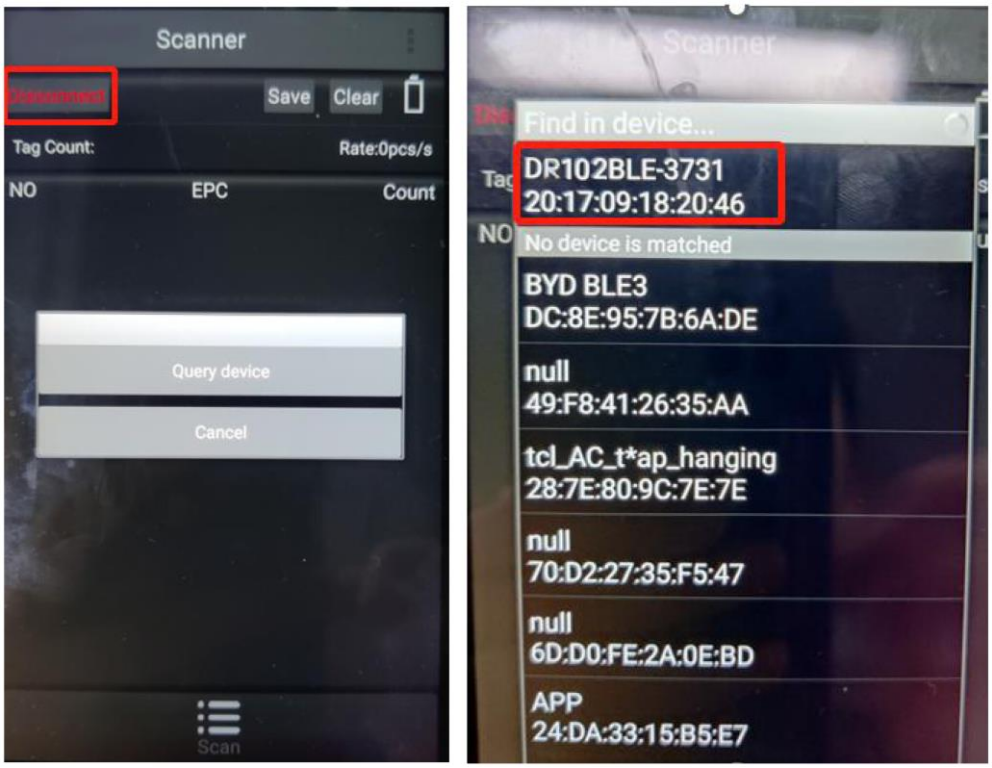

Figure 6

2.2.3 Scan the tag

Click the Scan Tag button to start the tag scan. The identified tag EPC is displayed on the software interface. In the right figure of Figure 7, information such as the number of tag EPC numbers scanned and the frequency rate of scanning can be displayed.

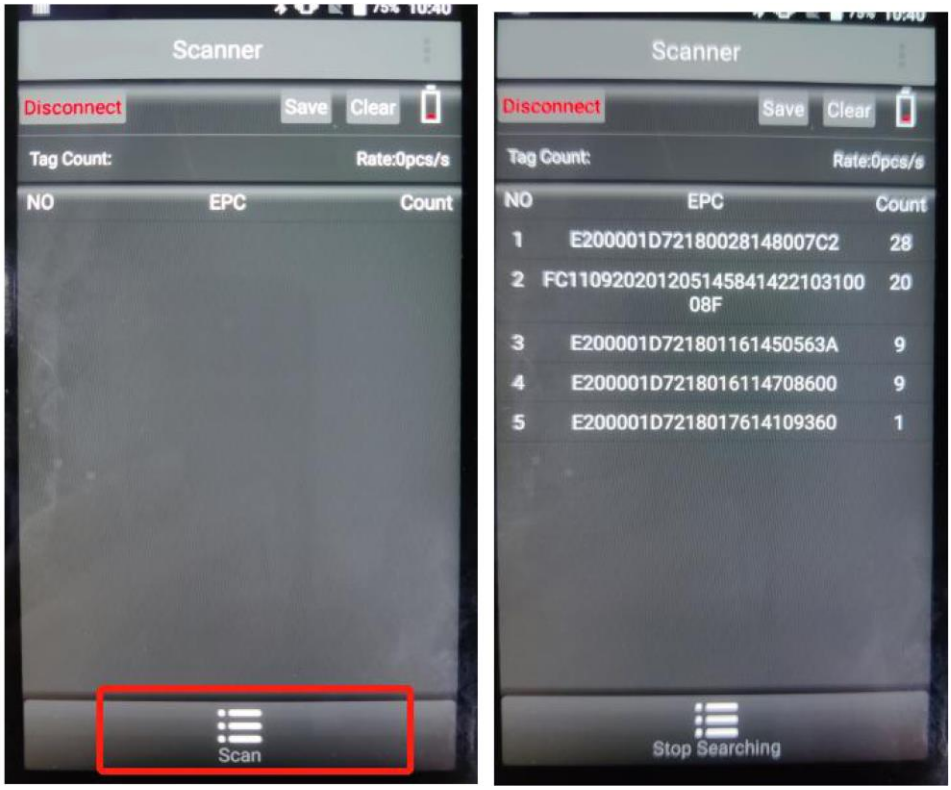

Figure 7

2.2.4 Clear data

Click the clear button to clear all tag EPC data in the list.

2.2.5 Read and write

The read and write operation is generally used with the Mask filtering operation, that is, the tag EPC that needs to be read and write is specified for reading and writing to prevent misreading and writing other tags. The specific steps are as follows: Perform the tag scanning operation on the main interface to find the tag that needs to be read and written.

Long press the EPC of the tag to enter the tag operation interface, select set Mask, and then read and write. This step requires stopping the scan first.

The tag operation is divided into read operation and write operation. Figure 8.

The tag data area of the tag operation is EPC (including CRC and PC), TID, USER and RFU. Contains the Access password and the Kill password. EPC is the ID number of the tag, usually 12 bytes of data. The TID area is the globally unique coding ID of the tag

manufacturer and contains the information of the tag manufacturer. User is the user data area. Some types of tags do not have User areas.

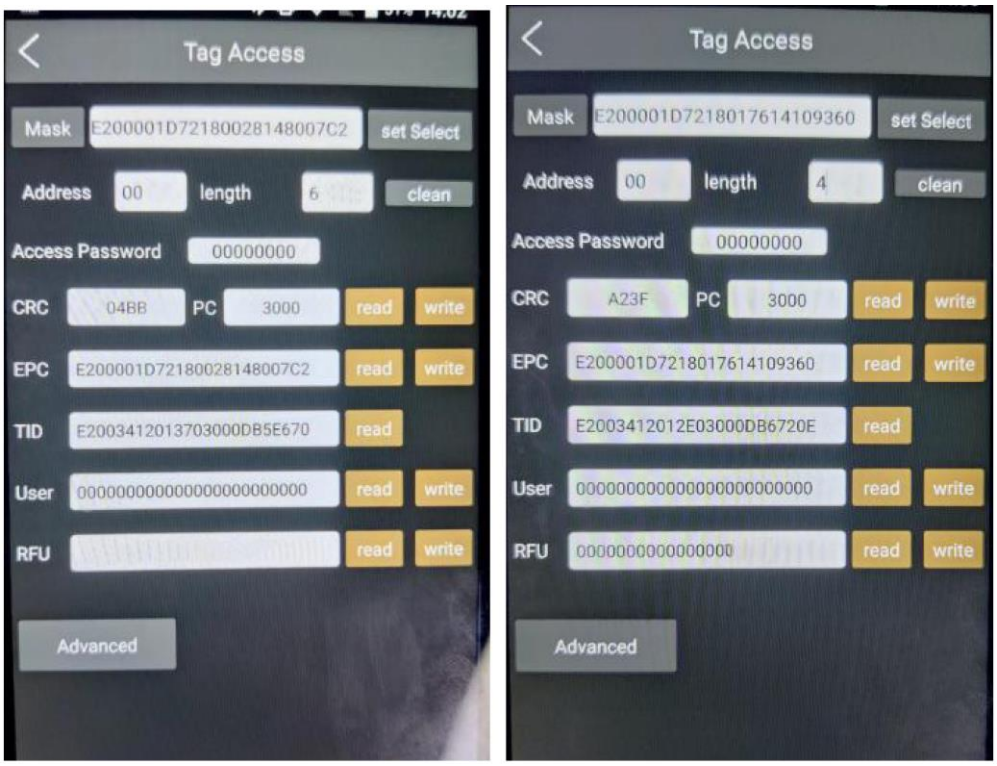

Figure 8

Start address: The starting address for data reading and writing. Note that the unit is a word (one word equals two bytes).

Length: The length of the data read and write, note that the unit is words (a word is equal to two bytes).

Access password: The access password is only used for reading and writing to the locked tag. Note: The data of the EPC can be read even if it is locked, but the write operation requires a password. The TID area is read-only area, and no data can be written. You need to set the Password (Access Password) and the starting position (Pointer) and the fetch Length(Length).

Write operation: can modify UHF tag EPC, USER, RFU function, of course, rewrite PC and RFU may cause some technical problems. Modification operations need to be carried out by engineers who know the ISO-18000-6C/EPC GEN2 protocol.

Error condition:

- The tag is not found: the tag is not in the recognition field, and the device cannot recognize the tag;
- Address offset or incorrect data length: Due to the tag reading or writing position is incorrect, for example, the tag length is 8, set the length to 12. Or the starting length is set to 2, the length is set to 8,etc.
- Incorrect Access Password: caused by an incorrect Access Password;
- Failure: Other errors, such as unstable or disconnected connections.

2.2.6 Locking and inactivation

As shown in Figure 9, the interface of locking and inactivation can be entered by clicking the red taged button "Advanced". The operation of "advanced" requires the operator to have some knowledge of the ISO-18000-6C/EPC GEN2 protocol.

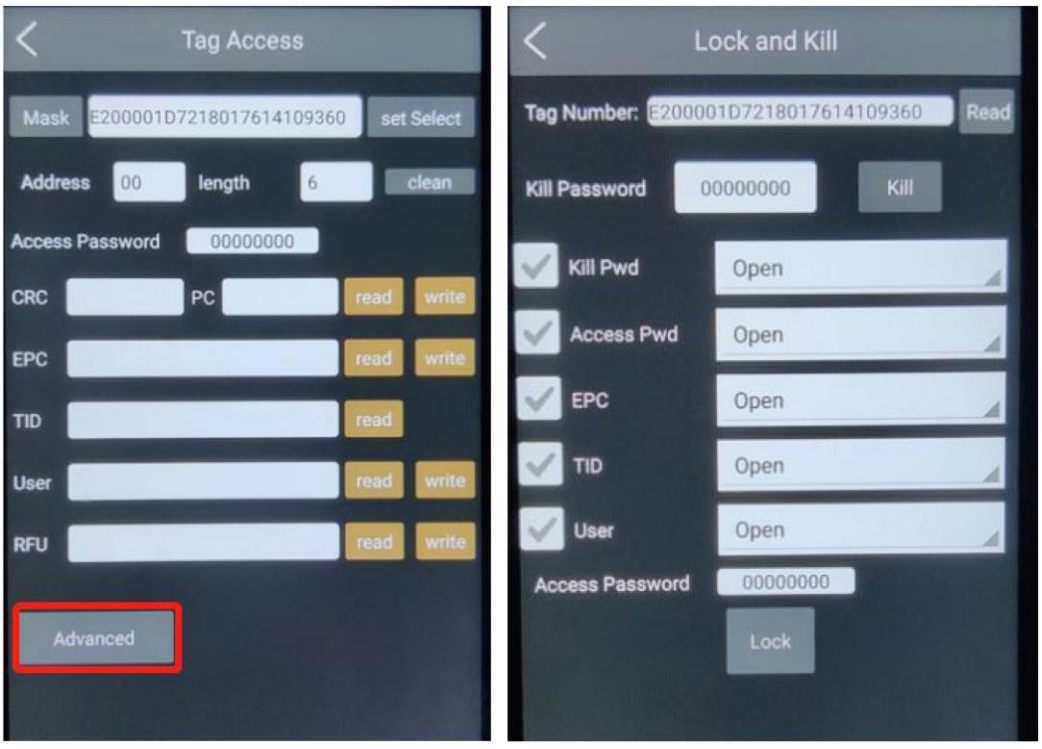

Figure 9

Lock: The locking operation requires the operator to be familiar with the locking function of the ISO-18000-6C/EPC GEN2 protocol.

Kill: Direct inactivation of the tag, resulting in permanent damage to the tag, tag loss of function, unable to use.

Error condition:

- Tag not found: due to the deviation of the tag position or the tag being removed after setting the Mask, etc.
- No password set: the Lock and Kill operations cannot be implemented because the initial password has not been modified.
- Failure: the password is incorrect or caused by unstable connection

2.2.7 Reader Settings

Click the red mark "Settings" in Figure 10 to enter the setting interface, which can set and obtain Power, Channel and Q value, and can also set whether the buzzer needs to sound after recognizing the tag.

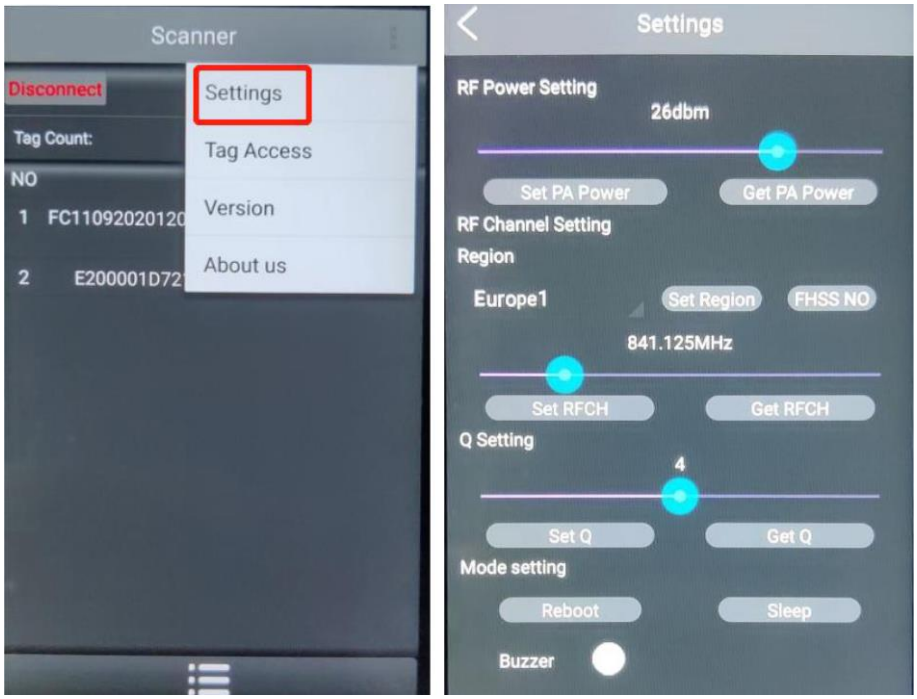

Figure 10

Error condition:

- Failure: Other errors, such as unstable or disconnected connections.