Wired BOX-Type RFID User Manual

ASR-032W

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1 About Wired BOX-Type RFID

1.1. Introduction

Thank you for purchasing Wired BOX-Type RFID ASR-032W.

This manual describes the considerations for using Wired BOX-Type RFID ASR-032W (hereinafter referred to as Wired BOX-Type or the AsReader). Please read the manual carefully and keep it as long as you have the device.

The Wired BOX-Type can be powered by PoE power supply or PoE switch. And it charges the iOS device and provides wired network for it at the same time. In addition, the Wired BOX-Type can also read UHF RFID tags. It can also be connected to multiple external USB devices (barcode scanners, and printers, etc.), and these functions can be controlled with iOS devices.

If you have any comments or questions about this manual, please contact us through the following ways.

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★The copyright of this manual belongs to the our company. Without the permission of the company, no reproduction, reprinting, modification or translation into other languages is allowed.

★The contents of this manual are subject to change without prior notice. In addition, the images in this manual are all reference images and may be different from the actual product.

★In order not to damage your property and life safety, please read this manual carefully before using this device. We will not be responsible for any loss caused by non-compliance with this manual.

★We are not responsible for any damage caused by natural disasters, such as earthquake, lightning, wind, flood, fire outside our responsibility, third party behavior, other accidents, intentional or negligent, abuse or other improper use.

★If the damage is caused by falling or collision as determined by our company, the maintenance fee will be charged even within the warranty period.

★We will take appropriate measures to ensure that our products do not infringe other patents, but we are not responsible for any patent infringement caused by any of the following (1) to (3).

(1) Used in combination with components, products, equipment, data processing systems or software outside our company.

(2) Our products are used in unexpected ways.

(3) Modification of our products by any person or company other than our company.

1.2. Safety Instructions (Please be sure to comply)

Please read the following instructions carefully to prevent injury, malfunction, fire, etc.

⚠ Warning
Do not attempt to disassemble, modify or repair the AsReader yourself, otherwise it may cause malfunction, fire or electric shock. We will not be held responsible for any problems that may occur with the AsReader, PC, smart devices, etc. due to modifications.
If you notice any abnormalities such as smoke, abnormal odor, or strange noise coming from the AsReader during use, stop using it immediately. Continued use may cause fire or electric shock.
Do not drop or throw the AsReader and subject it to strong impact. It may cause damage, fire, electric shock, or malfunction. It may also cause injury. If the AsReader is damaged by dropping and the inside of the AsReader is exposed, do not touch the exposed part with your hands, because there is a risk of electric shock or injury on the damaged part.
Do not allow metal or other objects to come into contact with the terminals of each connector. Doing so may cause a large current to flow, resulting in overheating, fire, or damage to the device.
Do not get the AsReader wet with water. Doing so may result in fire or electric shock. If foreign matter or water should get inside the AsReader, unplug the power cable immediately.
Do not use the AsReader with the power supply voltage other than the specified. Doing so may result in damage to the equipment or an accidental fire.
When constructing a system that may affect human life, such as the management of chemicals using the AsReader, please pay close attention to redundancy and safety design so that even if the data is incorrect, there is no possibility of affecting human life.
The AsReader is an RFID reader that uses UHF radio waves with an output power of 500mW. Therefore, depending on the application and location of use, it may affect medical equipment. In order to minimize this effect, the following must be strictly observed during operation. 1.The AsReader operators should keep the AsReader no closer than 22cm from the site where the implantable medical device will be installed. 2.The person wearing the implantable medical device should not come within 22cm of the AsReader. When taking the AsReader overseas, please consult with us in advance, as it is necessary to comply with the laws and regulations of each country and region.
⚠ Caution

Since each country or region has different regulations regarding radio waves, it is necessary to comply with the respective regulations. Modification of the AsReader is prohibited, and violations may result in penalties according to the regulations of each country or region.
Use the PoE power supply specified in this manual when connecting the AsReader. Use of non-standard PoE power supply may cause the AsReader failure or malfunction.
Please refer to local regulations when you recycle this device.
If you notice any abnormalities, please discontinue use and contact your distributor immediately.
Do not use, store, or leave the AsReader in hot places (eg. by the fire, near a heater, in direct sunlight, in a car in hot weather). It may cause rupture, malfunction, fire or injury.
Do not place the AsReader on an unstable surface such as a wobbly table or a tilted place. It may fall and cause damage to the crisis or injury.

How to Care for the Device

Always keep your AsReader clean. If the AsReader gets dirty, wipe it with a soft, dry cloth.

Use of volatile solvents such as thinner or benzene may cause deterioration or discoloration of the AsReader.

1.3. Product Pictures

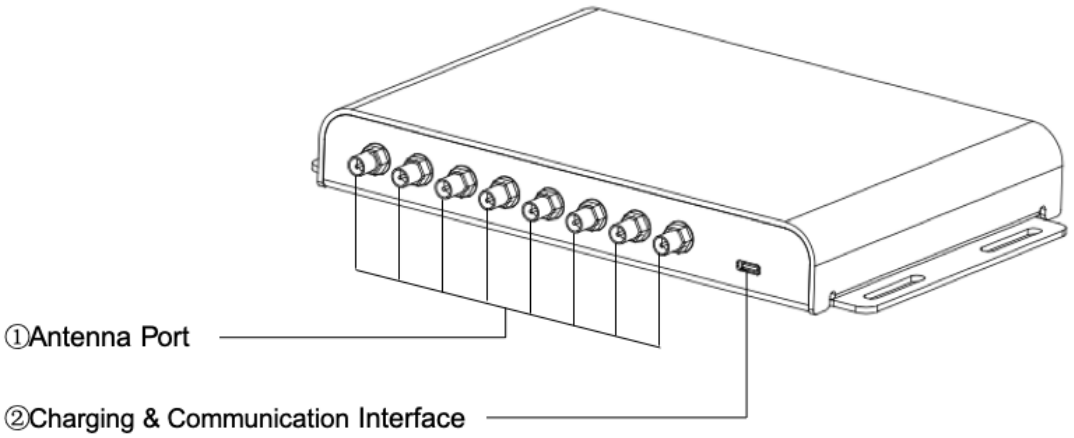

FIG. 1-3-1 Product appearance (front)

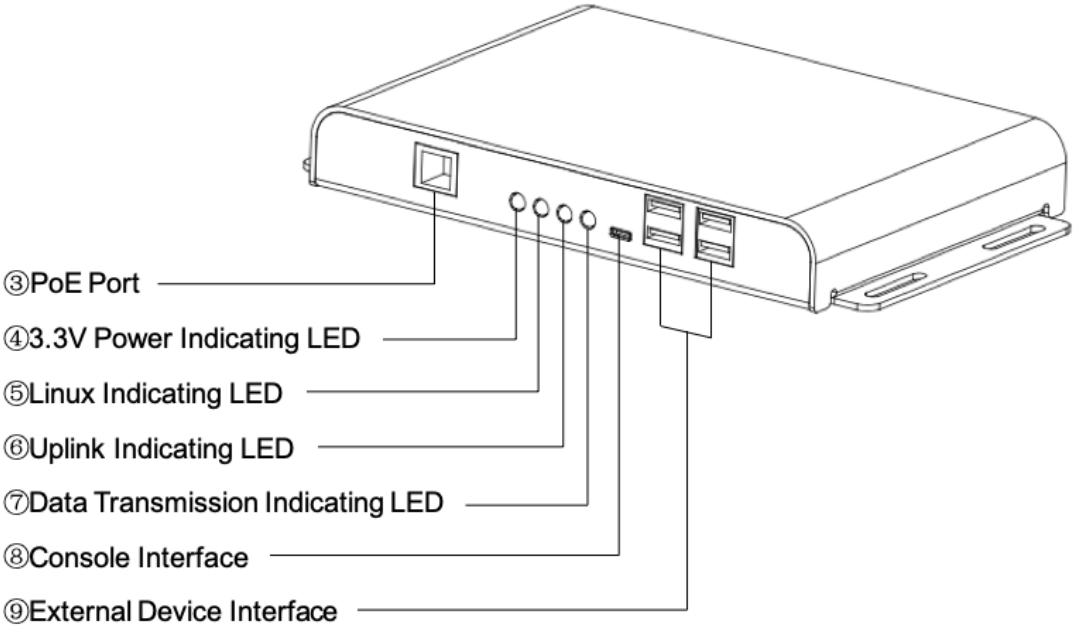

FIG. 1-3-2 Product appearance (back)

1.4. System Configuration

To build a system using the Wired BOX-Type, the following hardware and software are required in addition to the Wired BOX-Type itself. Some hardware requirements may vary depending on the power supply used and the type of communication.

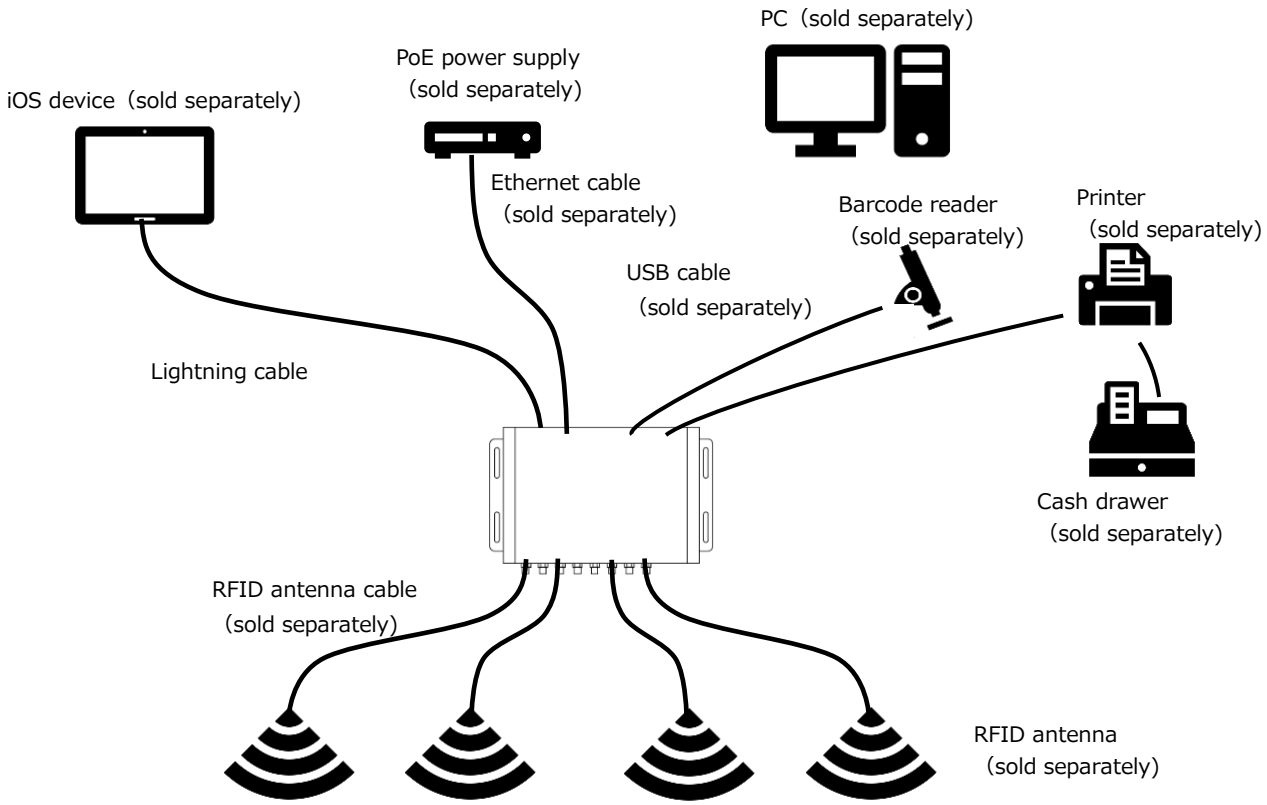

Fig. 1-4-1 Connection Image

In addition to the above hardware, an application for the iOS device is required to use the Wired BOX-Type. You can develop your own application for the iOS device using the SDK that we provide free of charge. You can download the SDK from our website.

https://asreader.com/products/asr-032w/

You can refer to the SDK manual and sample code that can also be downloaded from our website to develop your application.

1.5. Product specification

Model		ASR-032W
RFID	Spec	ISO 18000-63 (Old 18000-6C) / EPC global Class 1 Gen 2
	Radio frequency	902 ~ 928MHz (US) 865 ~ 868MHz (EU)
	Output	Max 500mW 27dBm
	Antenna port	SMA male x8 Output can be set for each port.
	Functions	Inventory
Power Source	Input	·RJ45 x1 PoE (IEEE802.3at compliant) * Be sure to use the following specifications for the PoE hub/injector and Ethernet cable to be used. Ethernet cable: Category 5e or higher PoE hub/injector: IEEE802.3at compliant
	Output	·USB-C x1: 12.5W *for charging iOS devices ·USB 2.0 Type-A x4: 2500mW (4 ports in total) *In case of connecting a device that requires more than the specified input, connect it via a self-powered USB hub.
Communication interface	Ethernet	RJ45
	USB-C	To plug in the dedicated lightning cable or USB Type-C cable for connecting an iOS device. A dedicated SDK for iOS app development will be provided.
	USB 2.0 Type-A x4	To connect HID communication devices such as barcode scanners and ESC/POS compatible printers.
	Console	Port for maintenance (not available for customer use).
Appearance	Dimensions (W)x(D)x(H)	220 × 145 × 29 mm
	Weight	Approx. 530g
	Material	Aluminum
	Color	Black
	LED Indicator	Power LED – Red System LED – Orange Network LED – Green Data transmitting LED - Green
Environment	Operation temp.	-10～45 ˚C, 20～85 % RH
	Storage temp.	-20～60 ˚C, 10～95 % RH
Certifications (TBD)		TELEC Apple MFi CE RoHS
Accessories		Dedicated lightning cable or USB Type-C cable

The specifications of this product are subject to change without notice.

2 Connect Devices

2.1. Connect Antennas

Please connect the RF cable of the antenna to the antenna interface of Wired BOX-Type (See FIG. 1-3-1①). It can connect up to 8 antennas. Tighten the screw of the connector without loosening it. If the connector is loose, reading performance will be degraded.
The RFID antenna and the antenna cable are sold separately.
Please contact your local distributor for the RFID antennas and antenna cables that can be connected. Connecting RFID antennas and cables other than those specified for our products is a violation of the Radio Law and will be punished by law.

FIG. 2-1-1 Connect antennas

2.2. Connect HID Device

Please connect the HID device via USB Type-A interface to Wired BOX-Type (see FIG. 1-3-2⑨), such as barcode scanner. The total power output from the four USB ports of the Wired BOX-Type is 2500mW(5V/500mA). If you wish to connect a device that requires more power than this, please connect the Wired BOX-Type and the relevant device via a self-powered USB hub.

FIG.2-2-1 Connect barcode scanner

2.3. Connect Printer

Please connect the printer to Wired BOX-Type via USB Type-A interface (see FIG. 1-3-2⑨) and connect the printer to power supply. The printer needs to be compatible with ESC/POS.

FIG. 2-3-1 Connect printer

2.4. Connect Cash Drawer

After you connect the printer to the Wired BOX-Type, please connect the cash drawer to the printer. The cash drawer is controlled through the printer.

FIG. 2-4-1 Connect cash drawer

2.5. Connect iOS Device

Please connect the attached Lightning cable or USB Type-C cable to the USB-C port on the Wired BOX-Type and connect it to your iOS device (see FIG. 1-3-1②).

FIG. 2-5-1 Connect iOS device

2.6. Connect PoE Power Supply

1. Please connect the PoE power supply and Wired BOX-Type with an Ethernet cable (RJ45 interface, see FIG. 1-3-2③).
2. Please connect the PoE power supply and the router with an Ethernet cable (RJ45 interface).

Please use an IEEE 802.3at PoE power supply.

Use a UTP cable of category 5e or higher for the Ethernet cable to be connected.

FIG. 2-6-1 Connect PoE power supply

2.7. Power On/Power Off

Power on method: Power on the PoE power supply after device connection is completed. Once all four LEDs on the Wired BOX-Type are turned on, it means the device has been turned on successfully.

FIG. 2-7-1 Wired BOX-Type power on

Power off method: Power off the PoE injector. Or disconnect the Wired BOX-Type from the PoE injector.

3 App Operation Instructions

3.1. Connect Wired BOX-Type

Connect:

Go to the Wired BOX-Type app and tap "Setting" to enter the Setting page.

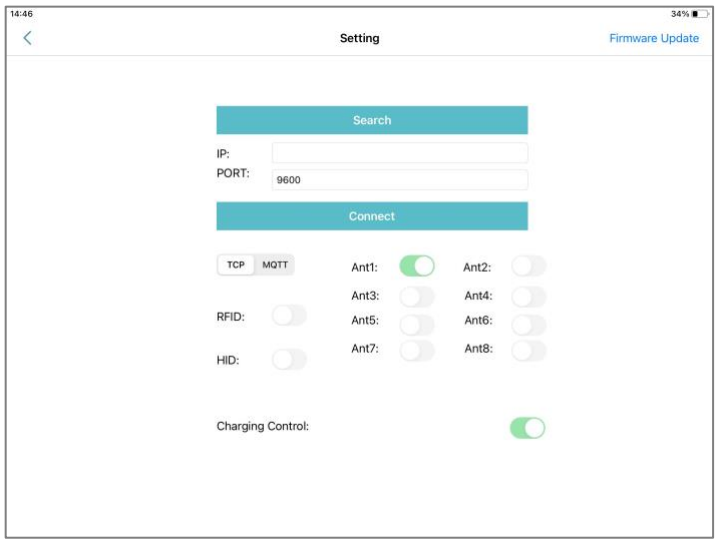

FIG. 3-1-1 Enter the Setting page

Select TCP or MQTT protocol communication on the Setting page, and then tap “Search”.

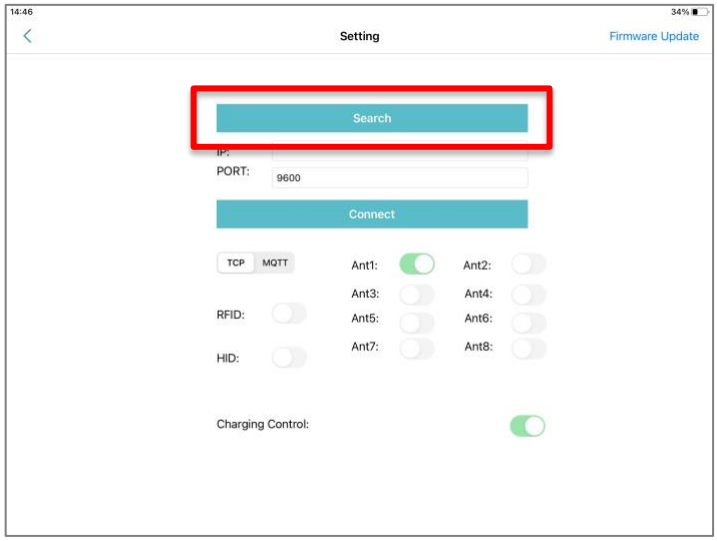

FIG. 3-1-2 Search for Wired BOX-Type

It displays the IP address of the Wired BOX-Type.

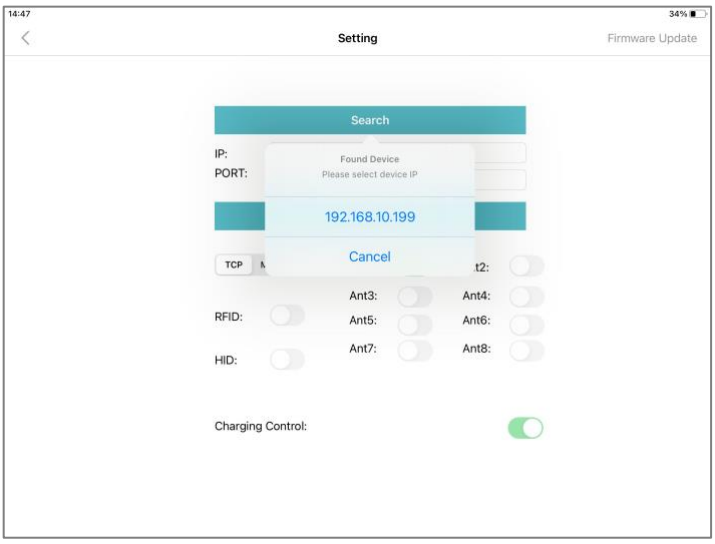

FIG. 3-1-3 Wired BOX-Type IP address

Tap the IP address in the figure above. If the "Connect" button changes into "Disconnect", the connection is successful, and each function button becomes active.

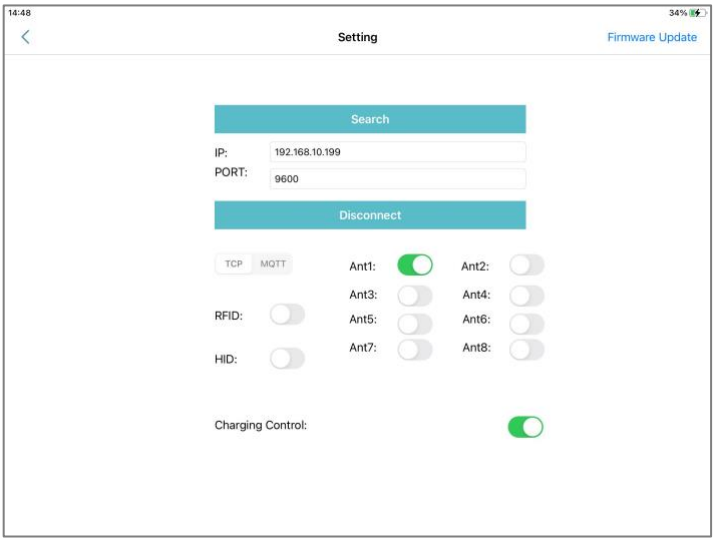

FIG. 3-1-4 The connection is successful

When the cable connected to the iOS device is unplugged and plugged in, the connection between the iOS device and the Wired BOX-Type will be disconnected and automatically reconnected. It may take more than 10 seconds to reconnect.

Disconnect:

Tap “Disconnect” to disconnect from the Wired BOX.

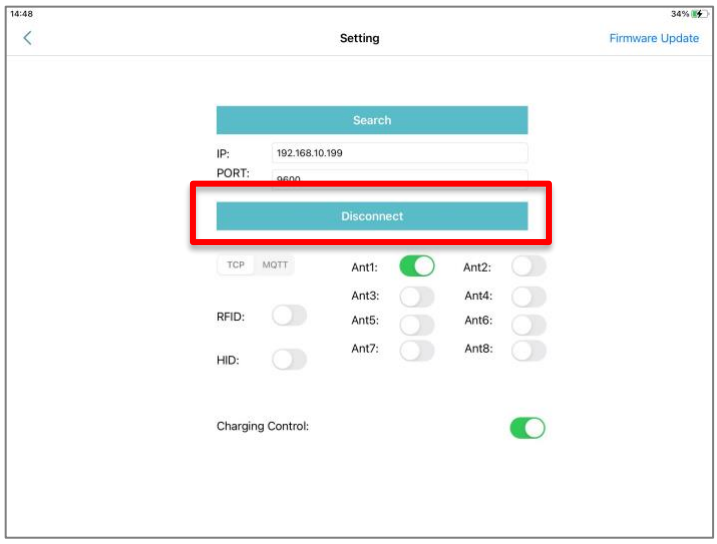

FIG. 3-1-5 Disconnect

3.2. Network Configuration

The function of this page is to configure the IP address of Wired BOX-Type, which supports setting static IP or dynamic IP.

FIG. 3-2-1 Network

Tap "Network" on the homepage of the app to enter the Network Setting page, and start searching for Wired BOX-Type.

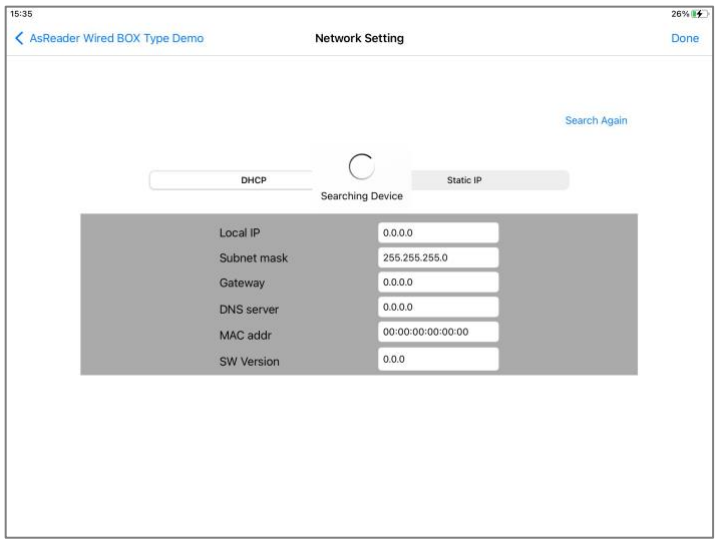

FIG. 3-2-2 Search for Wired BOX-Type

It displays the IP address of the Wired BOX-Type.

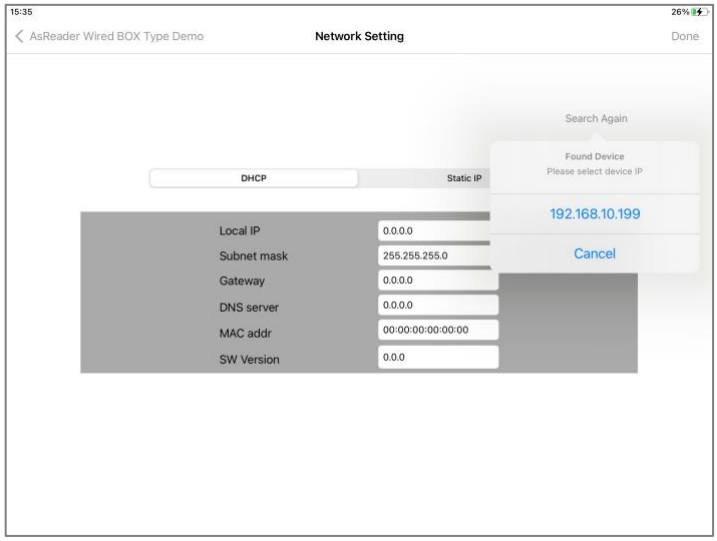

FIG. 3-2-3 IP address

Tap the searched IP address, and "DHCP" will be automatically selected if the current Wired BOX-Type is set to Dynamic IP, and "Static IP" will be automatically selected if it is static. The factory default of Wired BOX-Type is dynamic IP.

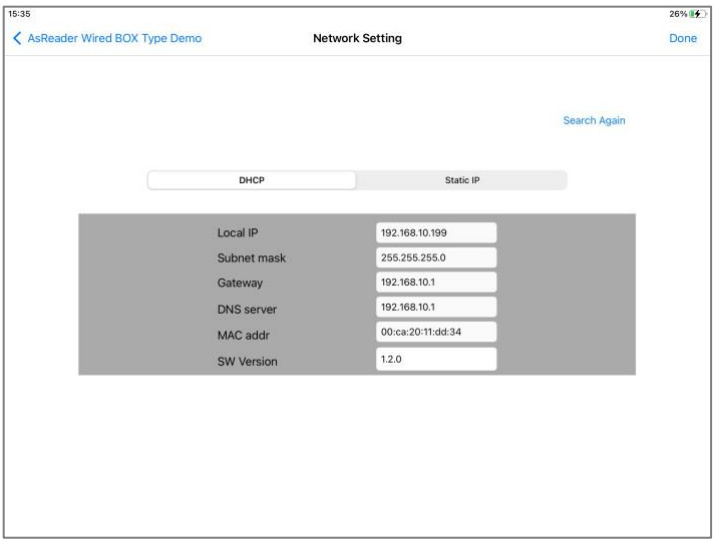

FIG. 3-2-4 Select IP address

Set static IP: ① select Static IP, ② change Local IP ,etc. , ③ tap “Done”. Please consult the network administrator of the network environment you are using for the IP address to be set.

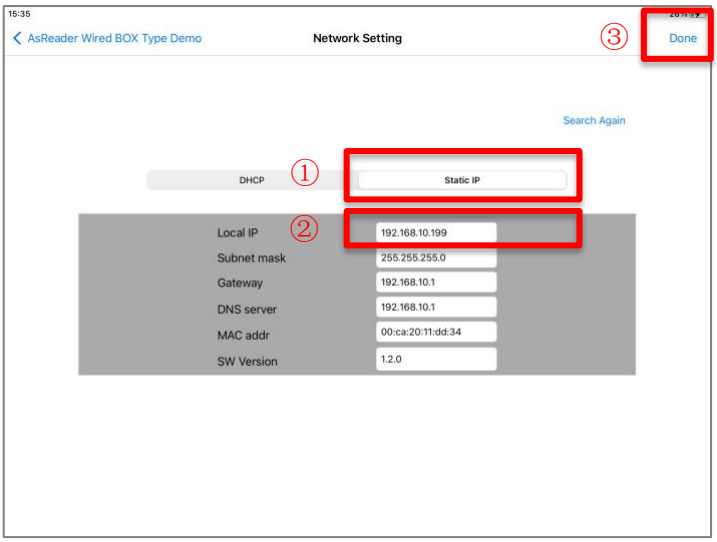

FIG. 3-2-5 Set Static IP

A message is displayed when the IP address setup is complete.

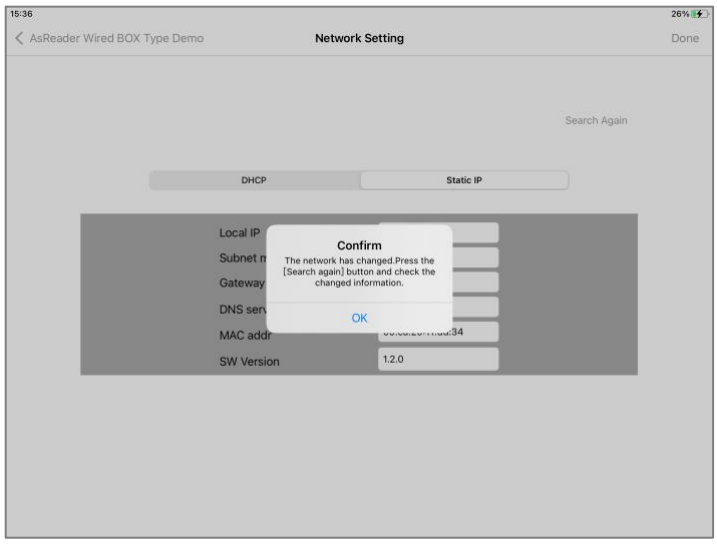

FIG. 3-2-6 Confirm

Set dynamic IP: ① select DHCP, ② tap “Done”.

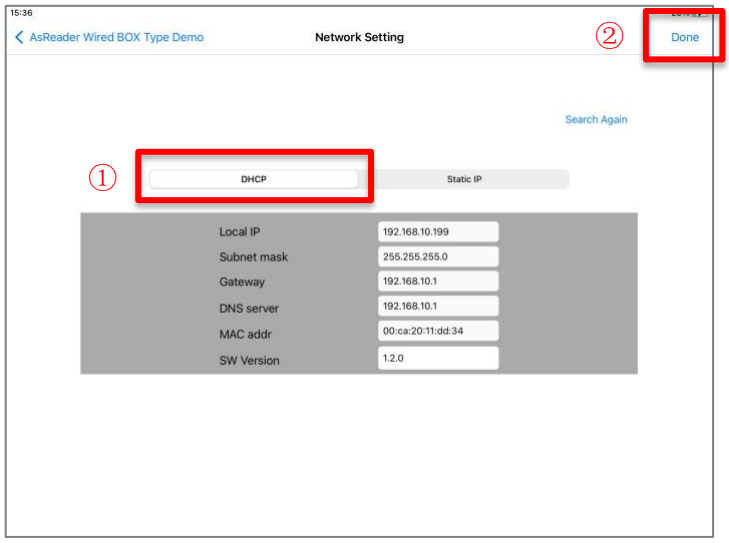

FIG. 3-2-7 Set dynamic IP

A message is displayed when the IP address setup is complete.

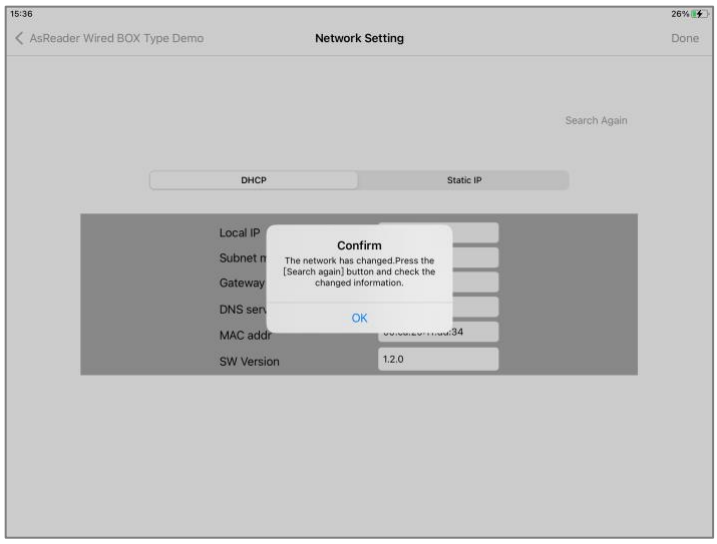

FIG. 3-2-8 Confirm

3.3. Basic Settings

Functions of the Setting page include searching Wired BOX-Type, connecting Wired BOX-Type, selecting communication protocols, RFID switch, HID switch, Firmware Update, and Charging Control switch.

TCP/MQTT: TCP or MQTT can be selected as the communication protocol.

RFID: the RFID tags can be read when the switch is on.

HID: It can receive data from HID devices such as barcode scanners when the switch is on.

Firmware Update: Update the firmware of Network board and RFID module.

Charging Control: It is used to control whether the Wired BOX-Type charges the iOS device or not.

① Charging Control on:

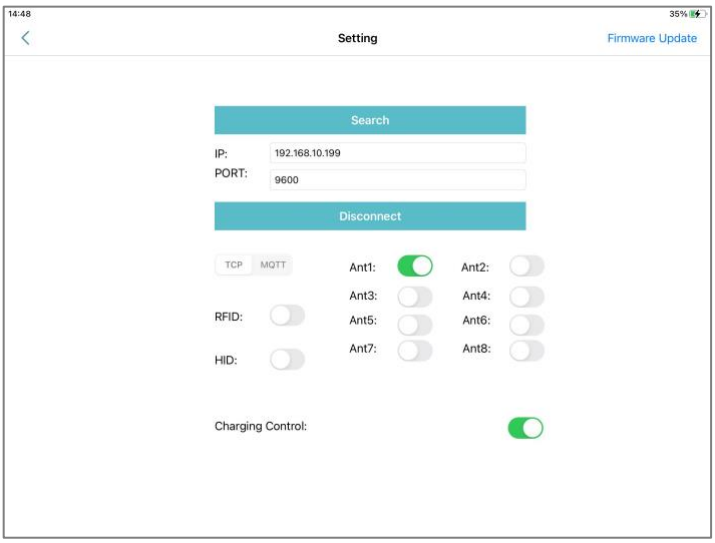

FIG. 3-3-1 Charging Control on

②Charging Control off:

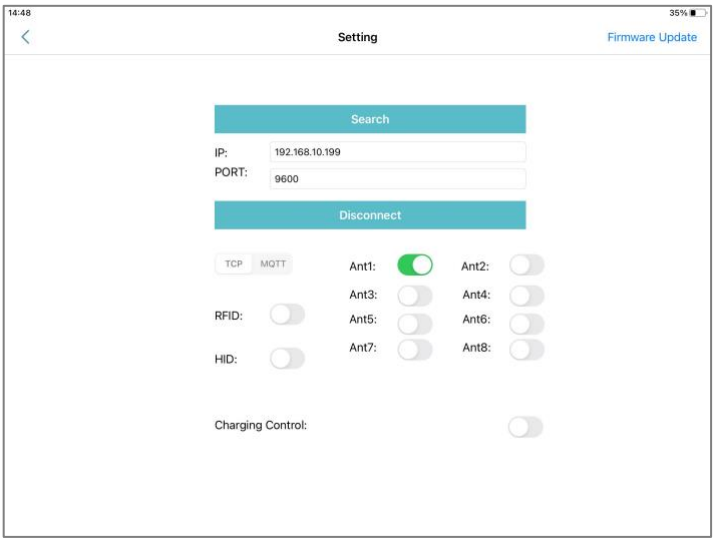

FIG. 3-3-2 Charging Control off

if you are using a USB Type-C cable, when you switch the Charging Control, the connection between the iOS device and the Wired BOX-Type will be disconnected and automatically reconnected, and it may take up to 17 seconds to reconnect.

3.4. Read RFID Tags

Please connect antennas to the Wired BOX-Type (see 2.1 Connect Antennas). Enter the

Setting page of the App. Turn on the RFID switch. Turn on the corresponding antenna switch. (By default, the switch of antenna 1 is on.)

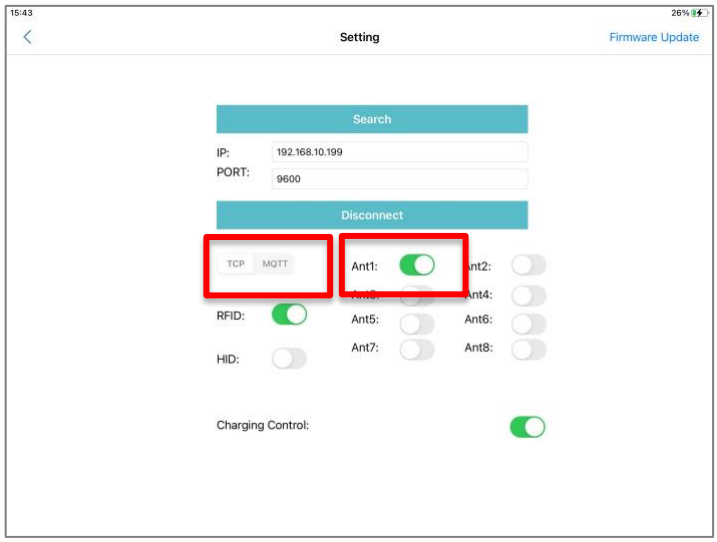

FIG. 3-4-1 RFID on

Tap "<" on the top left of the Setting page to return to the homepage of the App. Tap “Start Inventory” to read RFID tags. The EPC data and reading times of the read tags are displayed on the right side of the page.

FIG. 3-4-2 Read RFID tags

Tap “Stop Inventory” to stop reading.

3.5. Scan Barcodes

Please connect the barcode scanner to the Wired BOX-Type (see 2.2 Connect HID Device). Enter the Setting page of the app and turn on the HID switch.

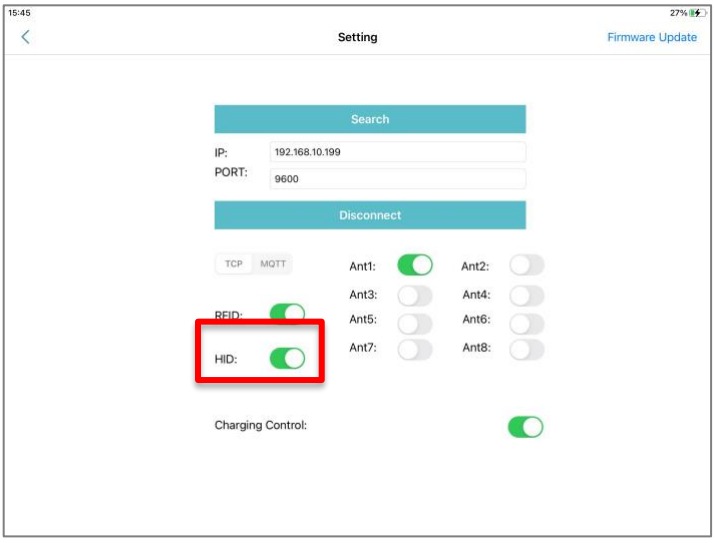

FIG. 3-5-1 HID on

Go back to the homepage of the app and use the barcode scanner to scan barcodes. The

contents and quantity of the scanned barcodes are displayed on the right side of the page.

FIG. 3-5-2 Scan barcodes

3.6. Print

3.6.1 Printer Setting

Tap "Printer Setting" on the homepage of the app and enter the Printer Setting page. This page can set the print content of the receipt and the type of the printer cuts paper.

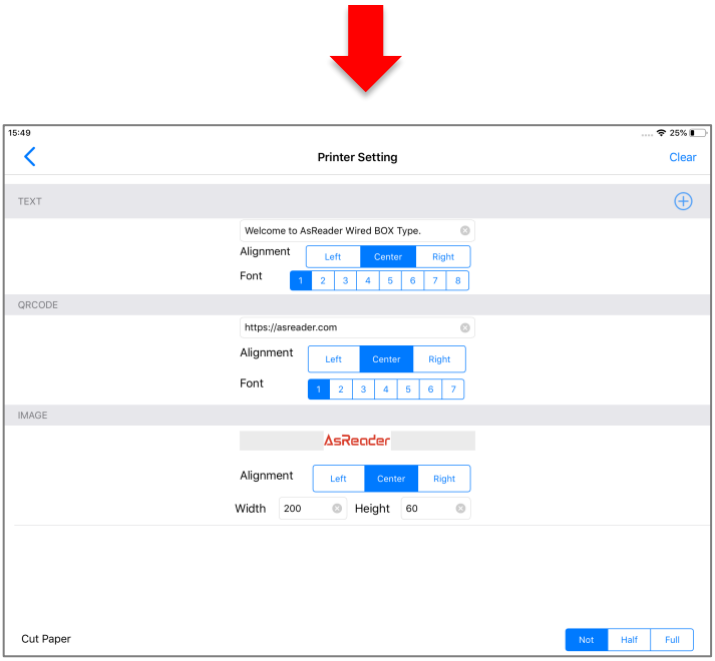

FIG. 3-6-1-1 Printer Setting page

(1) Text

In this area you can modify the content, alignment, and size of the text to be printed.

(2) QR Code

In this area you can modify the content, alignment, and size of the QR Code to be printed.

(3) Image

In this area you can select other images and modify the alignment, width, and height of the image to be printed.

(4) Cut Paper

The paper cutting type of the receipt can be selected from uncut, half cut, or full cut.

3.6.2 Print Receipts

Please connect the printer to the Wired BOX-Type (see 2.3 Connect Printer).

Tap "<" on the Printer Setting page to return to the homepage of the App. Tap “Print” and a message is displayed.

FIG. 3-6-2-1 Print receipts

Tap "OK" to print the receipt, and a message of successful printing is displayed.

3.7. Open Cash Drawer

Please connect the cash drawer to the Wired BOX-Type via the printer (see 2.4 Connect Cash Drawer). Tap "Open Drawer" on the homepage of the app to open the cash drawer.

FIG. 3-7-1 Open cash drawer

3.8. RFID Settings

Tap "More" on the homepage of the app to enter the RFID setting page. This page can be configured with RFID-related parameters.

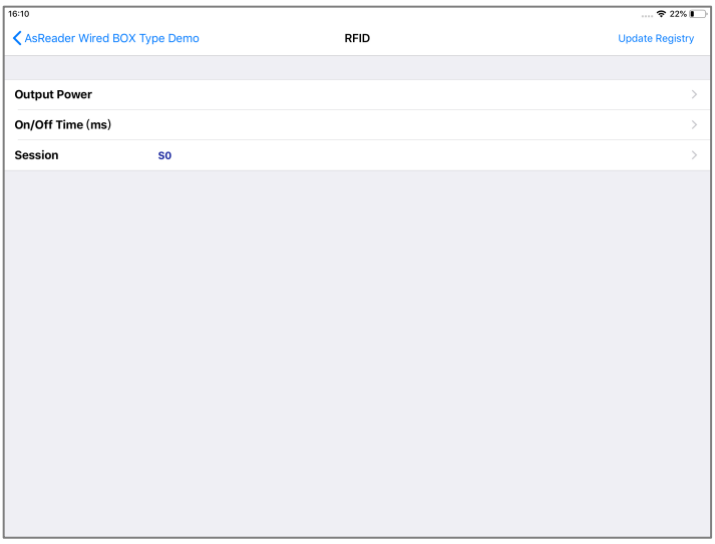

FIG. 3-8-1 RFID page

Note: Only when the "RFID" of the Setting page is on, the "More" on the homepage of the app is clickable.

3.8.1. Output Power

Tap "Output Power" on the RFID page to enter the Output Power page, which can set the output power of each antenna. The larger the value set, the farther the RFID tags can be read.

FIG. 3-8-1-1 Output Power page

Modify the output power of antennas, tap "Done" to complete the setting.

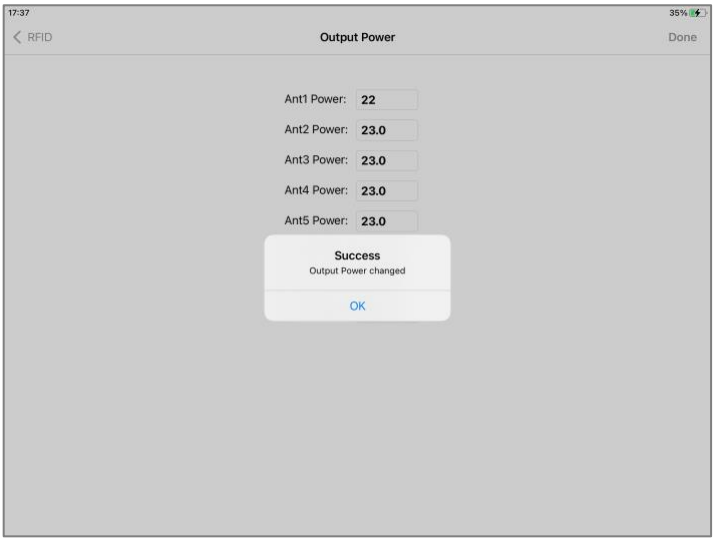

FIG. 3-8-1-2 Modify Output Power

3.8.2. On/Off Time

Tap "On/Off Time" on the RFID page to enter the On/Off Time page, which can set on time of each antenna (On Time) and off time of all antennas (Off Time).

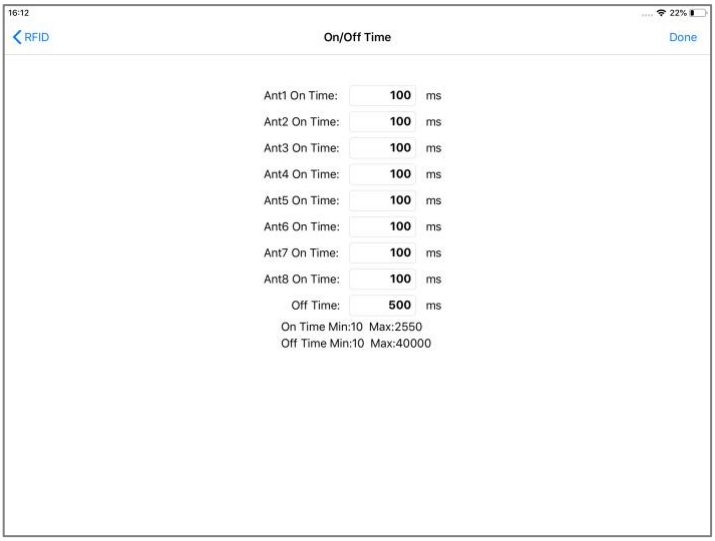

FIG. 3-8-2-1 On/Off Time page

Modify the on/off time of antennas, and tap "Done" to complete the setting. On Time range: 10-2550ms, Off Time range: 10-40000ms. If the single digit of On Time is not 0,

the single digit will be discarded. For example, 55 will be saved as 50. The longer the On Time setting, the faster the inventory will be.

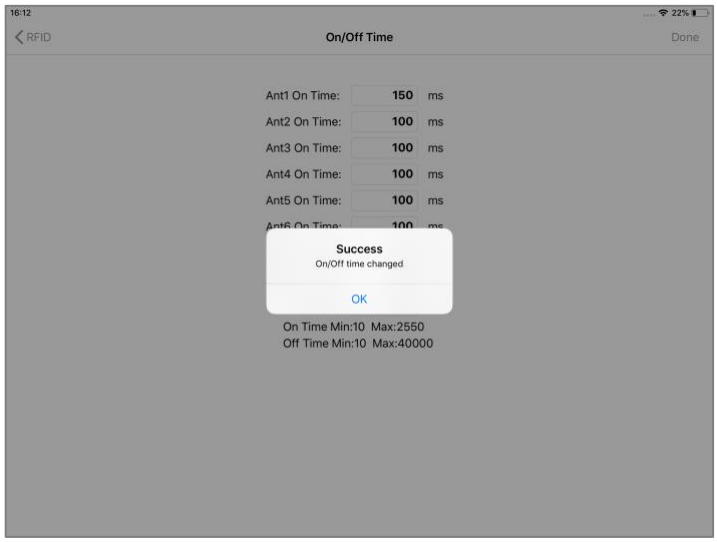

FIG. 3-8-2-2 Modify On/Off Time

According to the laws of various countries on the use of radio waves, the On Time and Off Time should be set according to the following table.

Regulations	**On Time**	**Off Time**
Radio law (JP)	Less than 4000ms	More than 50ms
FCC (US)	Less than 400ms	More than 20ms
CE (EU)	Less than 4000ms	More than 100ms

3.8.3. Session

Tap "Session" on the RFID page to enter the Session page. You can set the inventory session on this page.

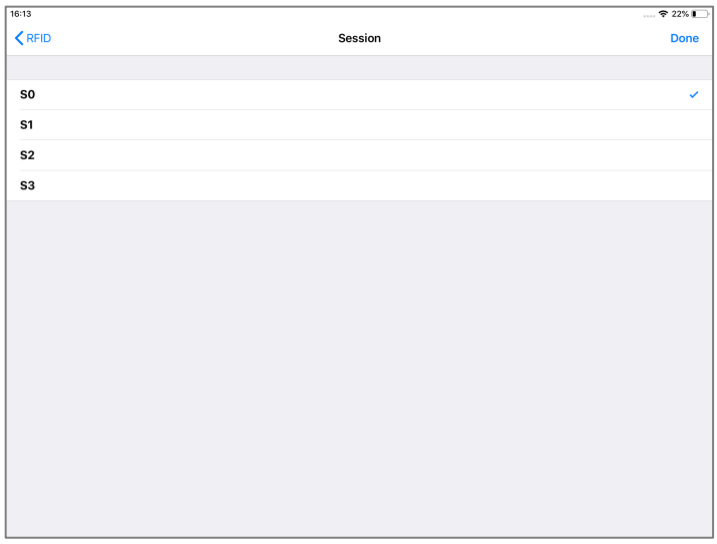

FIG. 3-8-3-1 Session page

Select session and tap "Done" to complete the setting.

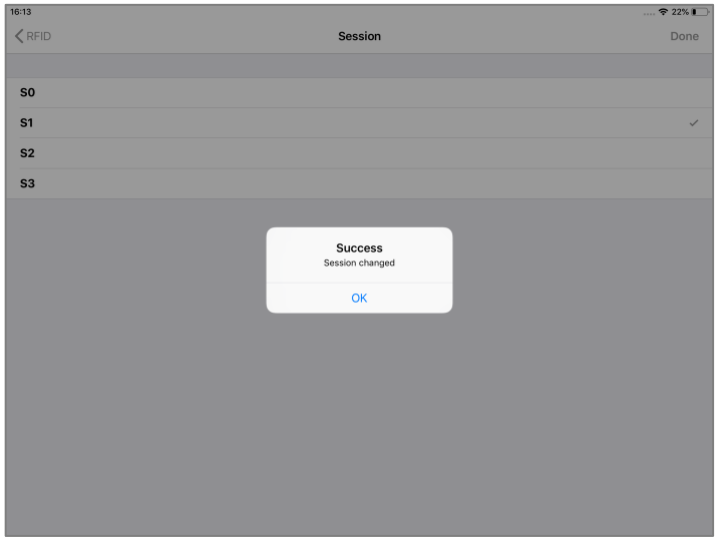

FIG. 3-8-3-2 Modify Session

3.8.4. Update Registry

Tap "Update Registry" on the RFID page to save the settings to the Wired BOX-Type. These settings will be maintained even after the Wired BOX-Type is restarted.

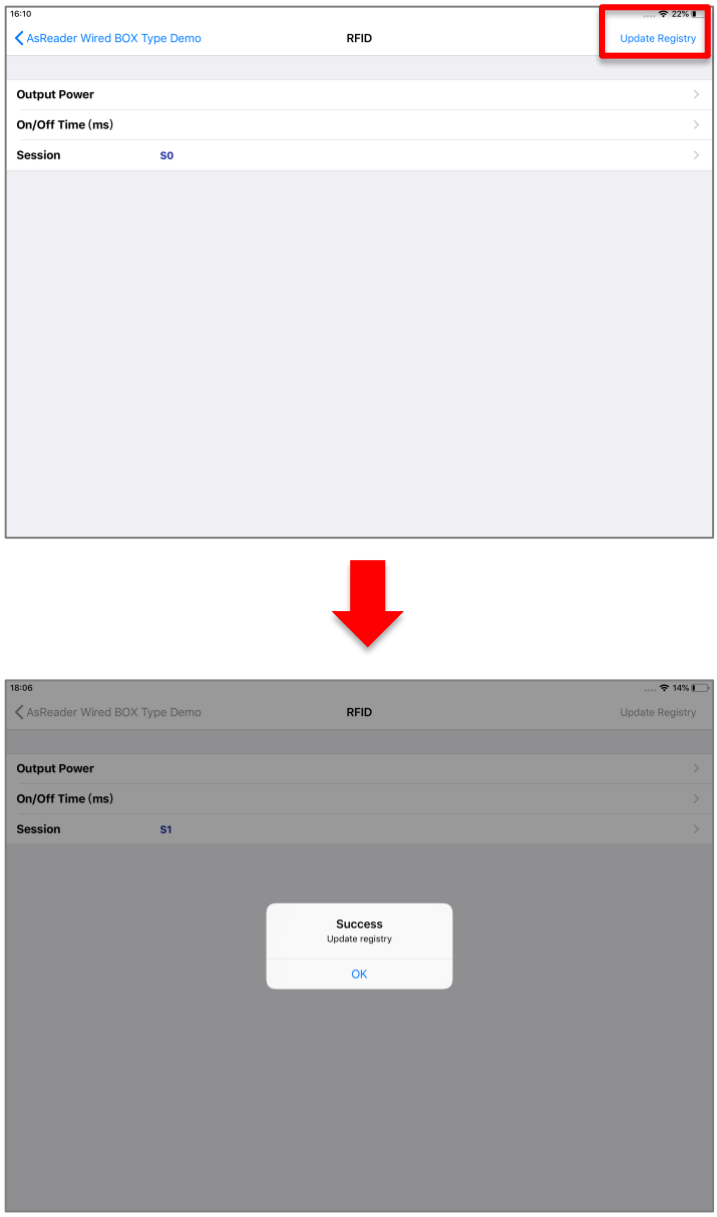

FIG. 3-8-4-1 Update Registry

3.9. Firmware Update

Tap "Setting" on the homepage of the app to enter the Setting page.

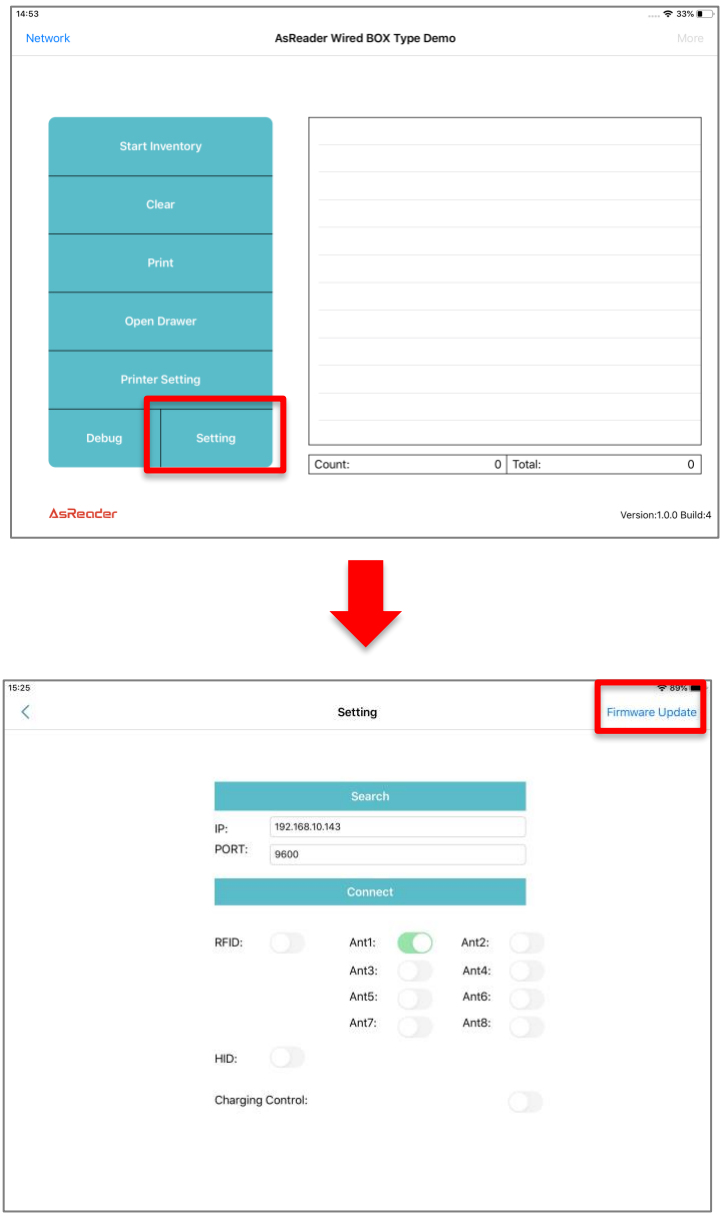

FIG. 3-9-1 Enter the Setting page

Tap "Firmware Update" in the figure above to enter the Firmware Update List page. This page supports updating the firmware of the network board and RFID module.

FIG. 3-9-2 Go to Firmware Update List page

3.9.1. Update Firmware of the Network Board

Tap Net Board in the figure above to enter the Firmware Update page.

FIG. 3-9-1-1 Firmware Update page

Tap “Select Protocol”, and select “jp.co.asx.asreader.wiredbox”.

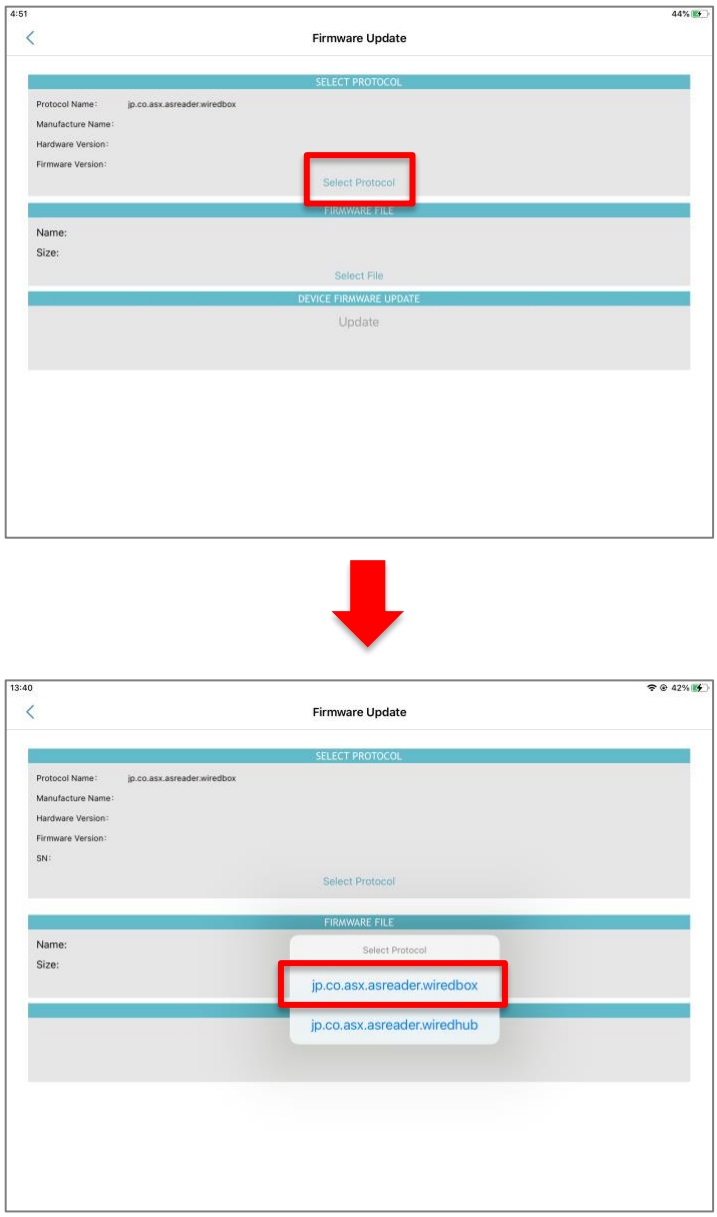

FIG. 3-9-1-2 Select protocol

It displays device information.

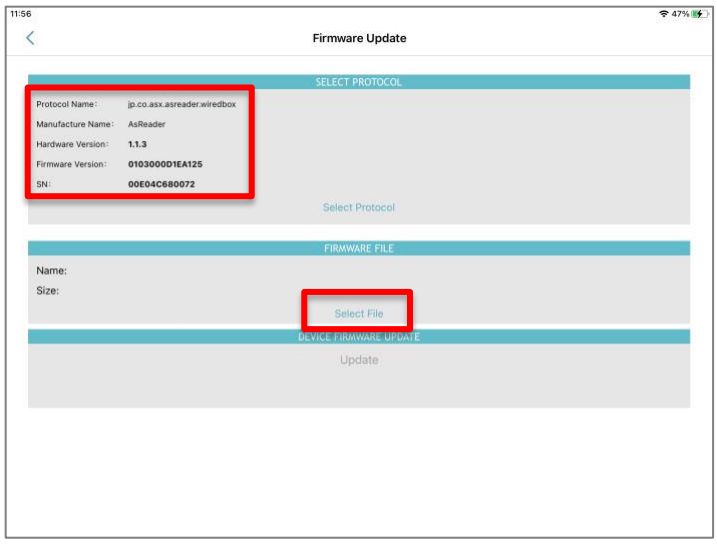

FIG. 3-9-1-3 Device information

Tap "Select File" in the figure above to enter the Select File page and display the list of currently updatable firmware. Tap “Sync” to download the corresponding firmware file from the server of the company.

FIG. 3-9-1-4 Synchronize the firmware packages

A message is displayed when the firmware files are successfully downloaded.

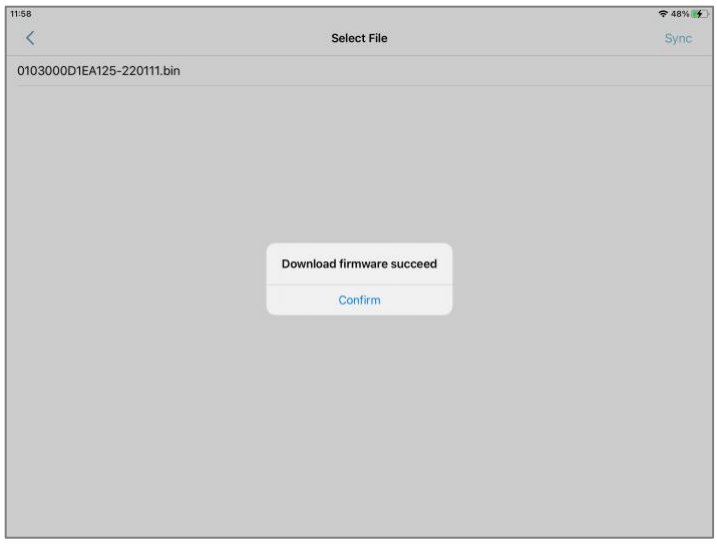

FIG. 3-9-1-5 Synchronize firmware packages successfully

Select the firmware file to be updated and tap “Select File” to return to the Firmware Update page.

FIG. 3-9-1-6 Select the firmware package

Tap "Update" to start updating the firmware.

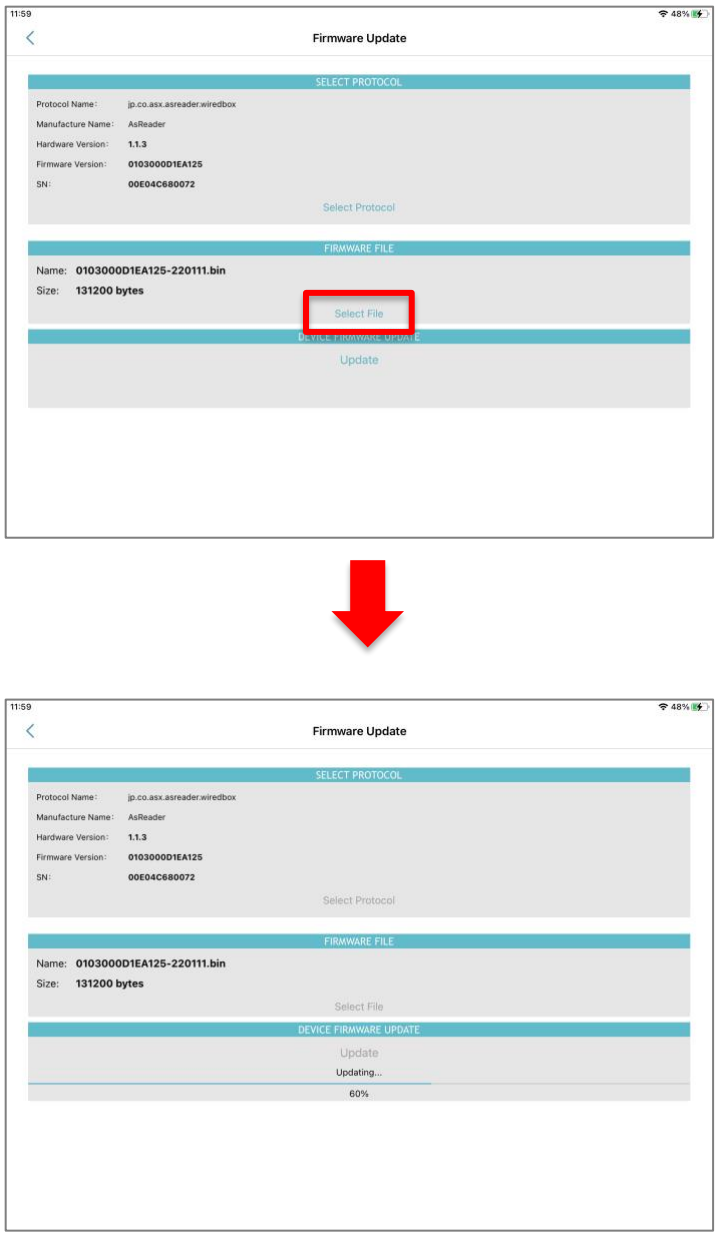

FIG. 3-9-1-7 Update the firmware

When the firmware is successfully updated, a message "Successful Update!" will be displayed.

3.9.2. Update Firmware of the RFID Module

Tap RFID Module in FIG. 3-9-2 to enter the Firmware Update page of the RFID module.

FIG. 3-9-2-1 Firmware Update page

Note: Only when the RFID Switch on the Setting page is on, the page for updating the RFID module firmware can be entered. Otherwise, a message "Please Open RFID Switch!" is displayed.

Tap “Select File” in the image above to enter the Select File page and display the list of currently updatable firmware. Tap “Sync” to download the corresponding firmware file from the server of the company.

FIG. 3-9-2-2 Firmwares sync

A message is displayed when the firmware files are successfully downloaded.

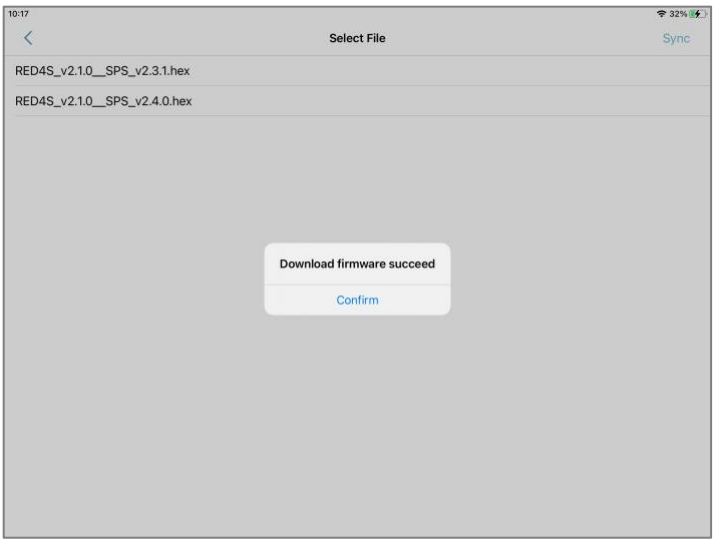

FIG. 3-9-2-3 Firmware download succeed

Select a firmware file to be updated, and tap “Select File” to return to the Firmware Update page.

FIG. 3-9-2-4 Select a firmware to update to

Tap “Update” to start updating the firmware.

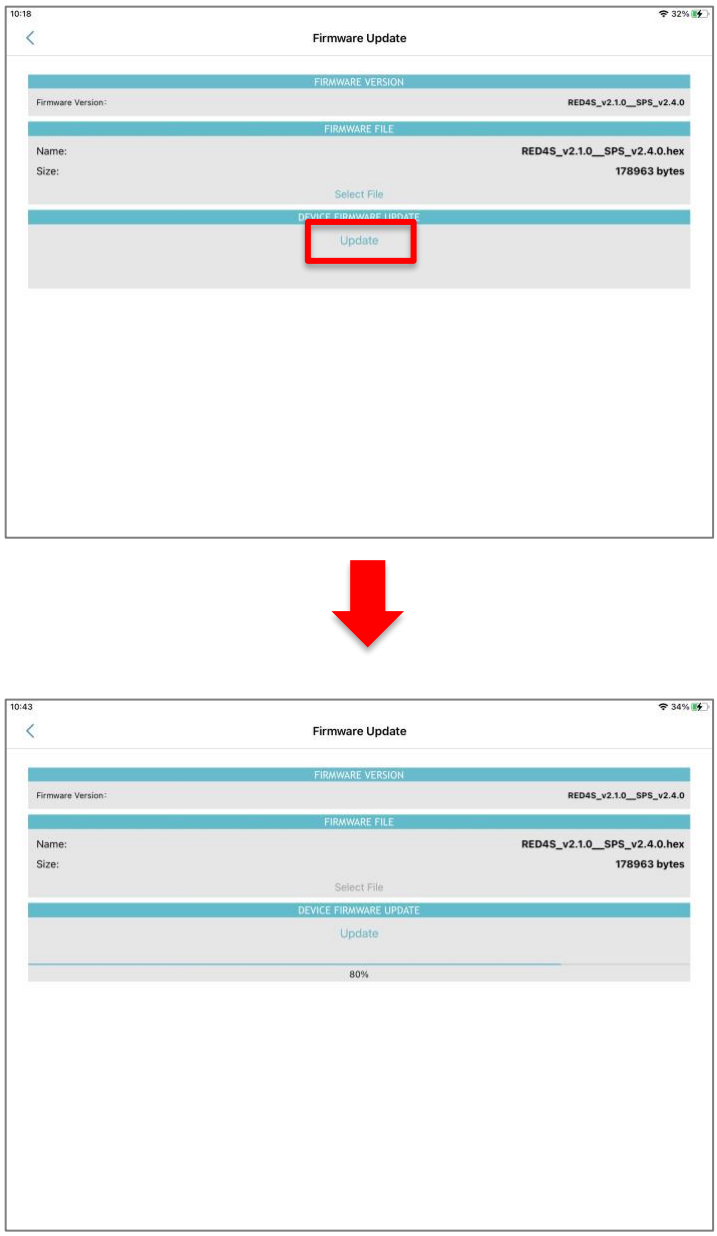

FIG. 3-9-2-5 Firmware updating

When the firmware is successfully updated, a message "Successful Update!" is displayed.

4 Wired BOX-Type OS Update

1) Connect the PC to the same network as the Wired BOX-Type. Use the browser to access the IP address of the Wired BOX-Type. Tap “Search” on the app to view the IP address, for example, 192.168.1.101.

2) Enter the Username and Password (the default for both is "root") and click "Login".

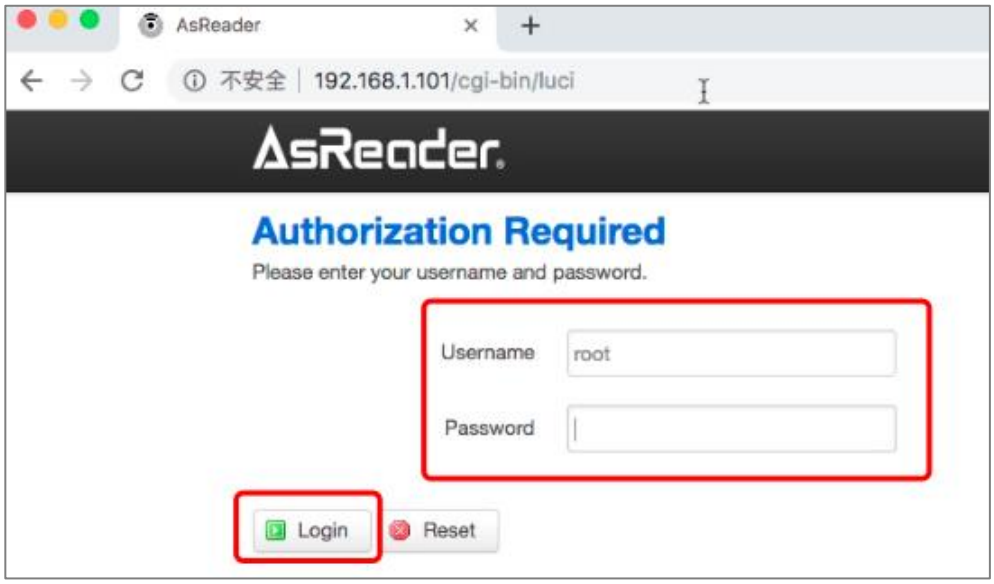

FIG. 4-1 Login page

3) On the system configuration page, click the top menu “System”→“Backup/Flash Firmware”.

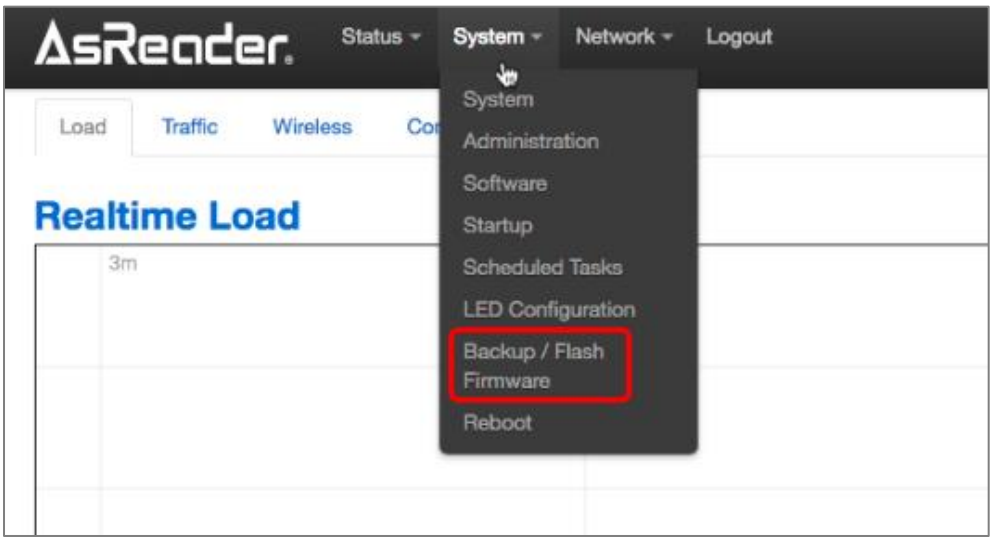

FIG. 4-2 Go to firmware update page

4) Click the "Choose file" button in "Flash New Firmware Image" at the bottom of the page. See the figure below.

✧ *Note: If "Keep settings" is checked, the settings made to the Wired BOX-Type through the browser (such as network settings) will be retained after firmware update. If "Keep settings" is not checked, initialization settings will be restored after firmware update.*

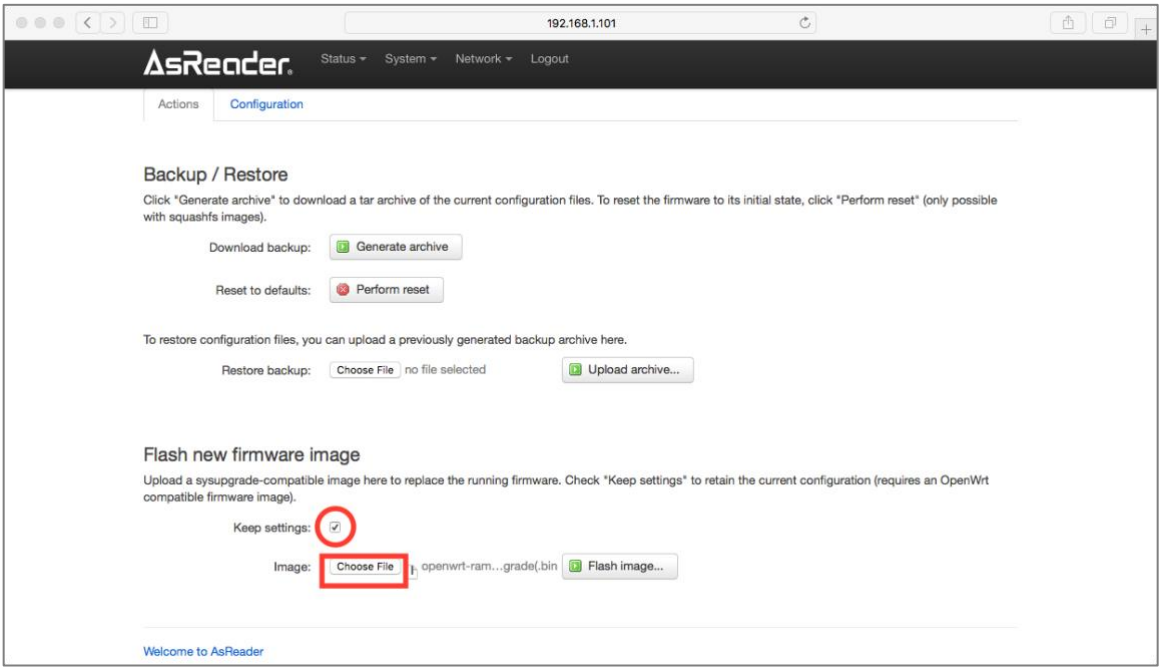

FIG. 4-3 Select a firmware to update to

5) In the file selection page that pops up later, select the firmware you want to upload and click “Open”.

6) Click the "Flash image..." Button, as shown in FIG. 4-3 at the bottom right.

7) If the firmware is correct, the image below will appear with the checksum information.

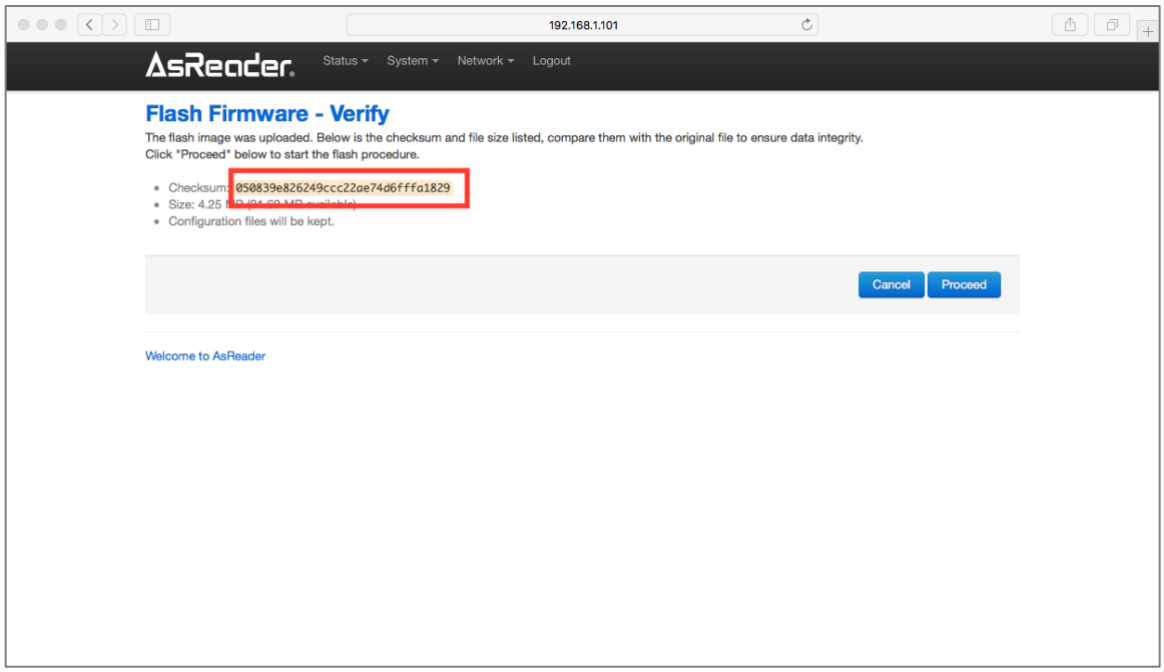

FIG. 4-4 Verify the firmware

8) Click the "proceed" button to start updating the firmware. Wait a few minutes for the firmware update to complete, and the Wired BOX-Type will restart automatically.

9) When all four indicators of the Wired BOX-Type light up, the restart is complete.

5 Troubleshooting

5.1. Troubleshooting

Before contacting your distributor, please make sure of the following;

① **Cannot connect the Wired BOX-Type to the iOS device when operating on the Setting page of the app.**

- Please check whether the Ethernet item is displayed in the iOS setting app. If not, there is a possibility that the cable connecting the iOS device and the Wired BOX-Type is not in good physical contact, or that the Wired BOX-Type is not turned on. Please reconnect the connection cable between the two devices, or reconnect the Ethernet cable of the Wired BOX-Type.
- If there is an Ethernet item displayed in the iOS setting app, but the correct IP address is not being obtained, the Wired BOX-Type itself may not be connected to the Ethernet correctly. Please contact your network administrator about the IP address to be set.
- If there is an Ethernet item displayed in the iOS setting app, and you are getting the correct IP address but cannot connect to the Wired BOX-Type, then the IP address of the Wired BOX-Type itself may be entered incorrectly. Please tap the "Search" button on the app Setting page to search again and try again after obtaining the correct IP address.
- If the setting item "Ethernet" appears on the Setting page of the iOS device, the IP address of the iOS device can also be correctly displayed. However, the app cannot find any Wired BOX-Type device when searching devices, so the

connection cannot be made. Well, it could be that iOS devices are connected to other wireless networks. In this case, turn off the Wi-Fi on the iOS device and try again.

② **Cannot read RFID tags**

- Make sure that the connection connectors of the RFID antennas and RFID antenna cables are securely connected. If the connection connectors are loose, the RFID tags may not be read.
- Make sure that the RFID antenna cable is correctly connected to the antenna connection terminal of the Wired BOX-Type specified in the application.

③ **Cannot read barcodes with the barcode scanner connected**

- Barcode scanners with high power consumption may not work only by power supply from the Wired BOX-Type. (The Wired BOX-Type's USB output is 2500mW for all four ports.)
  Please connect a self-powered USB hub to the Wired BOX-Type before connecting the barcode scanner.

AsReader Wired BOX-Type RFID

(ASR-032W)

User Manual

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