POINT Mobile

UHF RFID Reader

RF88

User Manual

Instruction

RF88 is a UHF RFID reader for various host devices. This manual provides information about basic features and using the RF88. Please read this manual carefully before using your reader and peripherals to ensure safe and proper use.

Note: *Screenshots in this manual may differ from actual screens.*

Revision History

Revision	Date	Description
v1.0	Dec 21 2023	Initial release
v2.0	Feb 28 2024	Changed RF88 figures to the no bracket assembled Added more host device installation guides Updated RFID Control description (BT pairing dialog, Wedge settings, etc.) Updated LED indicator operation
v2.1	Mar 22 2024	Changed back cover (Updated company address)
v3.0	Jul 04 2024	Added new host device, PM90-related description (connect mode, install, etc.) Updated RFID Control (V2) Application chapter Removed unsupported Tool descriptions Change the term “Wired” to “Wire”
v4.0	Nov 13 2024	Updated SKU list Updated RF88 figures (with cover for sled bracket connector) and part description Updated RFID Control (V2) Application chapter - Added description of auto update feature and configuration PC tool - Updated disconnect and reconnect chapter Updated Sled Bracket Replacement chapter - Added a step and figure to remove the cover for sled bracket connector - Added description to mate the sled and RF88 correctly Improved some descriptions for better understanding

Related Documents

You can see the following guides related to RF88 in Point Mobile Knowledge Base (Account is required).

- RFID Control (V2) User Guide

Introduction

RF88 SKUs

The contents of this manual can cover the following SKUs.

RF88

Part Number	Plug	RFID Engine	Sled Bracket
RF88-00U0-G	US/KR/EU/UK	IDRO900ME-L for FCC/CE/KC	No sled bracket (Sold separately)
RF88-00E0-E	EU/UK	IDRO900ME-L for FCC/CE/KC	
RF88-00J0-7	JP	IDRO900ME-L for JP	

Sled Bracket

Part Number	Host Device
RF88-S85	Sled bracket for PM85
RF88-S86	Sled bracket for PM86
RF88-S90	Sled bracket for PM90
RF88-S95	Sled bracket for PM84/95

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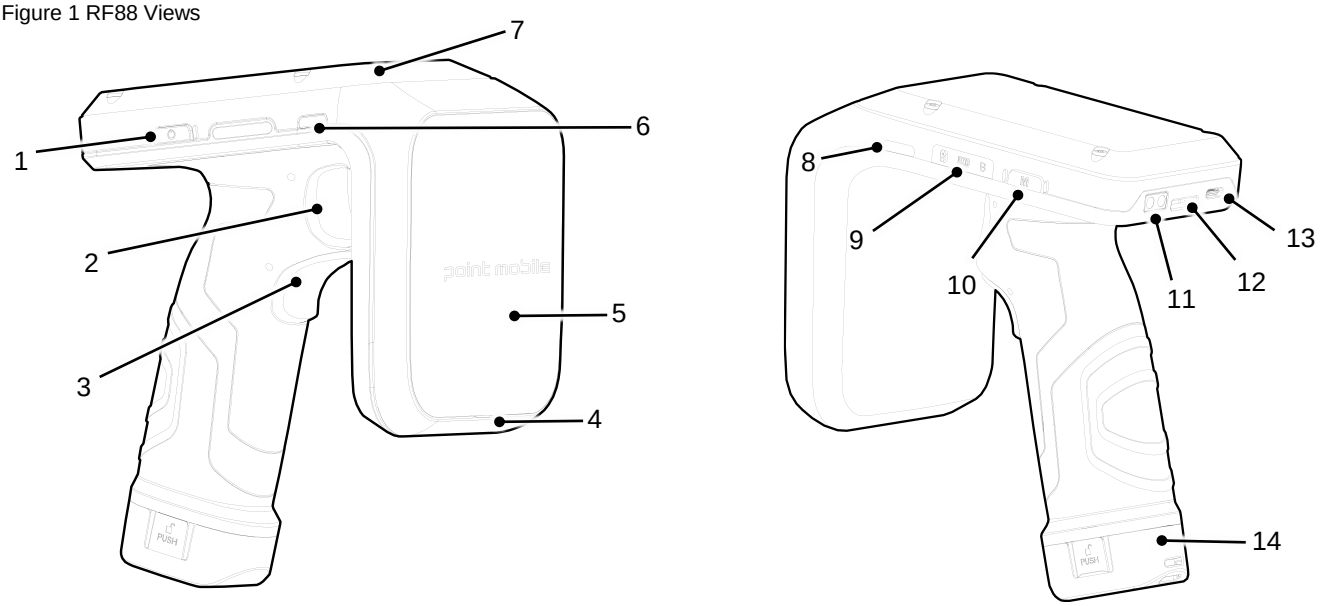
Device Parts

Figure 1 RF88 Views

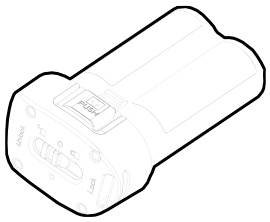
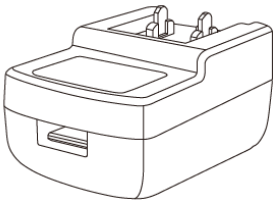
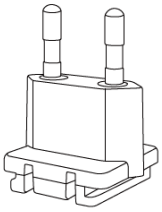
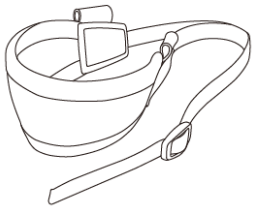


No	Name	Description
1	Power button	Press and hold to turn on/off the RF88
2	Upper trigger button	Read RFID tags by pressing (Changeable)
3	Lower trigger button	Triggers barcode reading of the connected host device (Changeable)
4	NFC tag for Bluetooth connection	Connect a host device using NFC Tap-to-Pair
5	UHF RFID antenna	Read RFID tags
6	Notification LED (Left)	Indicates the result of RFID tag reading
7	Cover for Sled bracket connector	Remove the cover and assemble a sled bracket for host device
8	Notification LED (Right)	Indicates the result of RFID tag reading
9	LED indicators	Indicate the status of power / charging, connection, batch mode. Refer to Status Indication
10	Mode button	Press and hold to turn on / off the batch mode or change the connect mode (only for PM90)
11	I/O connector	Connector for charging cradle
12	Hand strap hole	Attach hand strap
13	USB Type C connector	Plug USB cable to charge the RF88 or communicate
14	Battery & Battery locker	Supply power to RF88 or replace battery

Getting Started

Product Standard Accessories

The following items are in the product box.

Accessory	Name
	Battery
	5V / 2A power adapter
	AC plug
	USB type C cable
	Hand Strap

Note: *The images may differ from the actual accessory.*

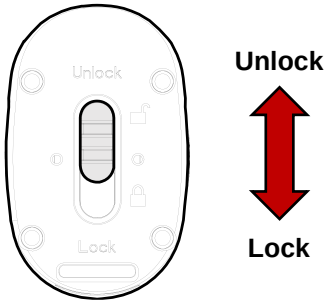
Getting Started

Replace the Battery

When the battery level is low, replace the battery with a charged one.

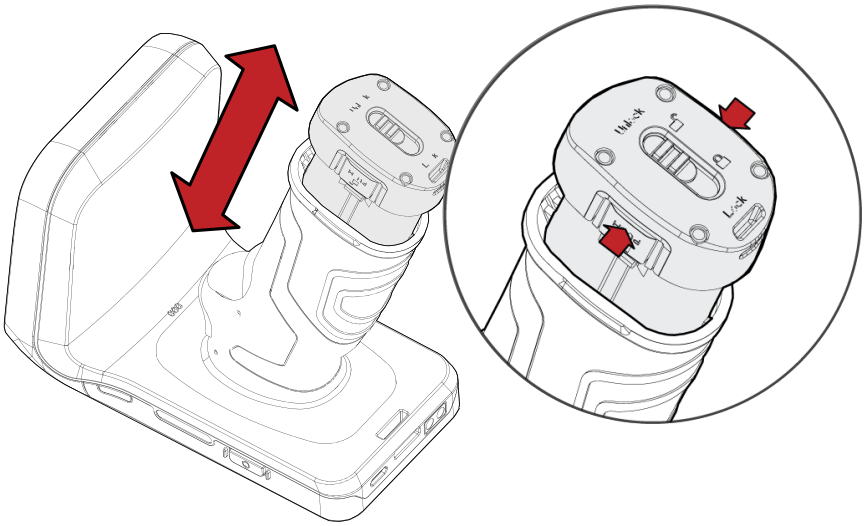
1. Slide the battery locker as **Unlock** .

Figure 2 Battery locker



2. Press the battery release button on both sides and pull the battery out.

Figure 3 RF88 battery replacement



3. Insert a new or charged battery all the way.
4. Slide the battery locker as **Lock** to engage the battery firmly.

Getting Started

Charge the Device

Caution: *Always use an original charger and cable from Point Mobile. Other chargers and cables may damage RF88. Also, make sure the connector, charger, cable is not wet.*
Follow the Battery Safety Information for safety of using the battery.

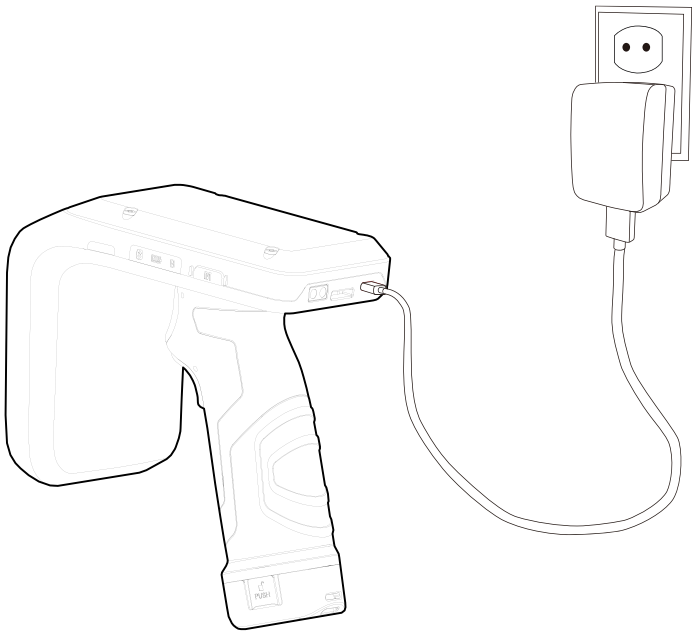
Charging temperature

Charge RFID readers and batteries in temperatures from 0 ℃ to 45 ℃. At out-of-normal range temperatures, the RF88 or battery may be damaged.

Charge with AC adaptor

1. Assemble the AC plug and power adapter.
2. Plug USB type C cable to the power adapter.
3. Connect the cable to USB connector of RF88.
4. Provide power by plugging the power adapter to the power outlet.

Figure 4 Charge RF88 (Adapter)



Note: *The RF88 and the host device won't be charged together.*
When connecting the charger to RF88, only RF88 will be charged.

Getting Started

Charging with Cradle

SSC / SEC (Single Slot Cradle)

Charge the RF88 with one of the following host devices installed through the cradle (Optional accessory).

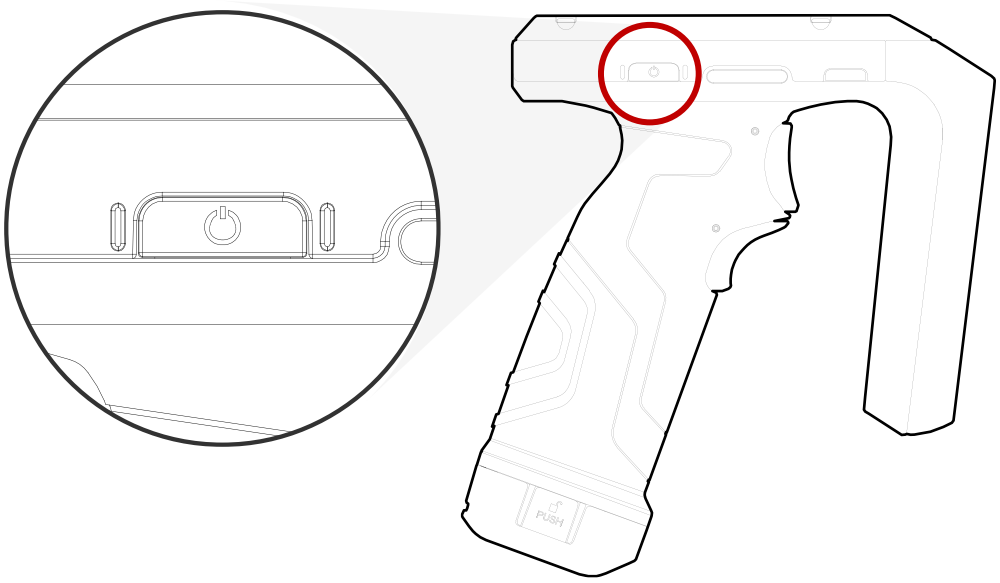
- PM85
- PM86
- PM84
- PM95

Place the device onto the cradle. RF88 and the installed host device will be charged simultaneously when charging with SSC/SEC.

Turn on/off the Device

To turn on or off the RF88, press and hold the power button for 3 seconds until a melody ring.

Figure 5 RF88 Power button

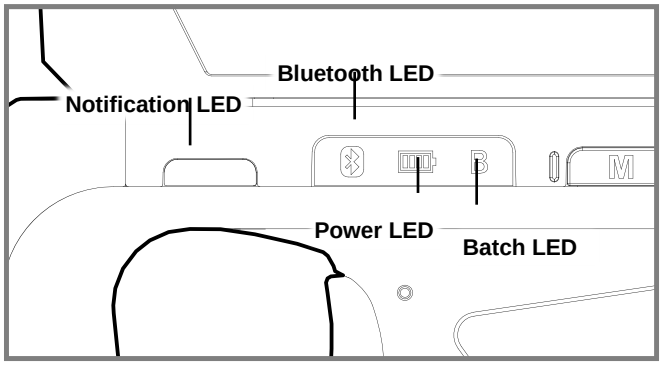


Getting Started

Status Indication

Unless the beep sound is muted, user can check the RF88's battery, connection, reading status through LED indicators and beep sound.

Figure 6 RF88 LED indicators



Description	LED Sequence	Beep Sequence
Turn on / off		
RF88 is turning on	(Power) Turns on for 5 seconds depending on the battery level	Short low – Short medium – Short high
RF88 is turning off	All LEDs turn off	Short high – Short medium – Short low
Battery level (Press any button shortly to activate)		
Battery level is more than or equal to 50%	(Power) Green on for 5 seconds	None
Battery level is between 16% to 49%	(Power) Amber on for 5 seconds	None
Battery level is less than or equal to 15%	(Power) Red on for 5 seconds	None
Charging		
Fully charged	(Power) Green on	None
Battery is charged between 15% to 100%	(Power) Amber on	None
Battery is charged under 15%	(Power) Red on	None
Charging error	(Power) Red blinking	None

Getting Started

Connection		
(for PM90 only) Bluetooth connection mode	(Bluetooth) Blue blinking	(Once when changing) Short high
(for PM90 only) Wire connection mode	(Power) On in a color based on the battery level	(Once when changing) Short high
Bluetooth connected	(Power) On in a color based on the battery level (Bluetooth) Blue on	Short high
Wire connected	(Power) On in a color based on the battery level	Short high
RFID Reading		
Reading RFID tag	(Notification) Green flash	Short high
RF88 is in Continuous read mode	(Notification) Amber blinking slowly	None
RFID reading unavailable	None	Short high x 4
Batch mode		
RFID reader enters batch mode	(Batch) Amber on	Short low – Short high
RFID reader exits from batch mode	(Batch) Amber off	Short high – Short low

Note: *When RF88 enters sleep mode, all LED indicators will turn off.*

Getting Started

Sled Bracket Replacement

RF88 can be used with various host devices by sled brackets. Change the sled bracket according to the host device model. A screwdriver is required.

1. Remove the cover or sled bracket assembled onto the RF88.

   You can detach it by loosening the four screws on the corners using a screwdriver.

Figure 7 Removing cover

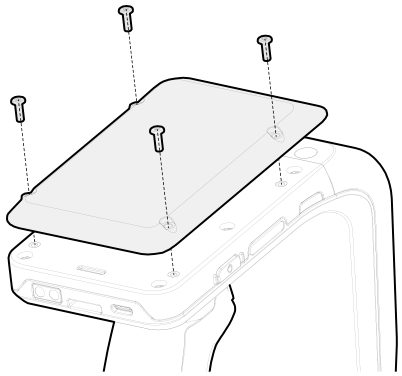
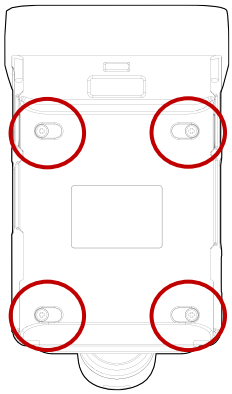


Figure 8 Sled bracket (top)

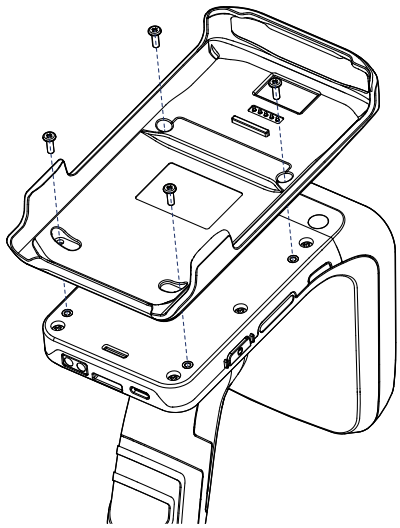


2. Attach the correct sled bracket for your host device.

   Ensure the pogo pins on the RF88 mate with the pogo contact pad on the bracket or the groove on the PM85 sled bracket.

3. Fasten the four screws.

Figure 9 Sled bracket replacement



Note: *You can confirm the connection with the PC tool. For more details, visit Service Portal.*

Getting Started

Host Device Installation

Install a host device onto the RF88.

The way to installation of the host device may differ from the host device model.

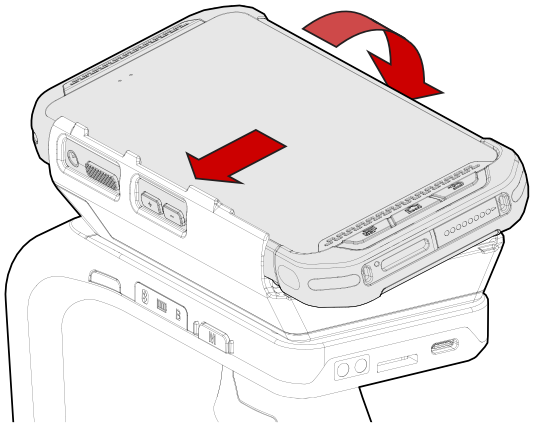
- PM85
- PM86
- PM84
- PM95
- PM90

PM85 Installation

Caution: *Remove the hand strap of the device before installing it onto the RF88.*

1. Align the sled bracket of the RF88 to match the button holes to the PM85 buttons.
2. Place the one side of the PM85 to the bracket first.
3. Push the other side to engage the devices firmly.

Figure 10 Installing PM85



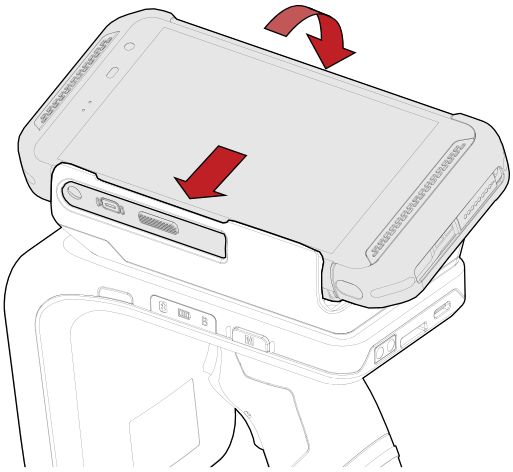
Getting Started

PM86 Installation

Caution: *Remove the hand strap of the device before installing it onto the RF88.*

1. Align the sled bracket of the RF88 to match the button holes to the PM86 buttons.
2. Place the one side of the PM86 to the bracket first.
3. Push the other side to engage the devices firmly.

Figure 11 Installing PM86



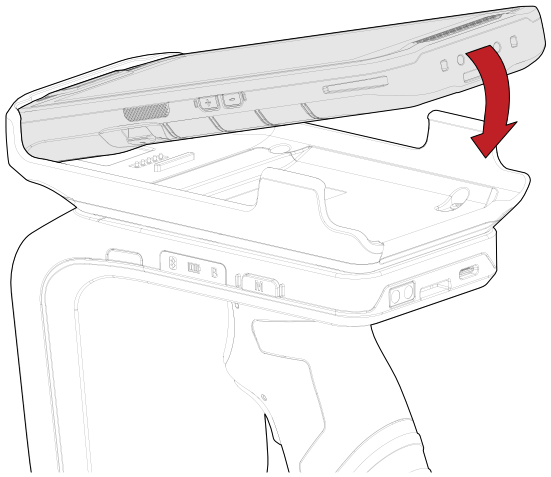
Getting Started

PM84 Installation

Caution: *Remove the hand strap of the device before installing it onto the RF88.*

1. Put the PM84's top side to the sled bracket first.
2. Push the bottom side to engage the device firmly.

Figure 12 Installing PM84



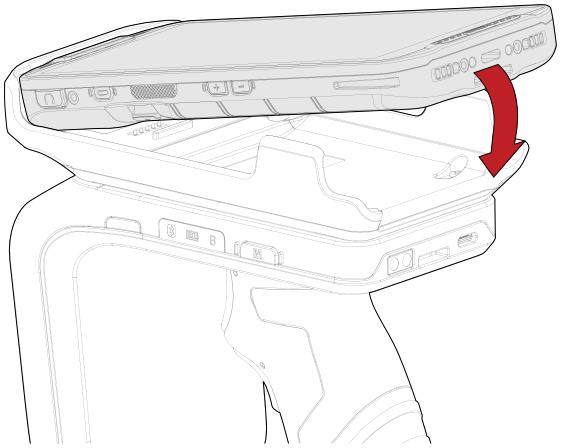
Getting Started

PM95 Installation

Caution: PM95 ICCR/MSR or Dual SAM SKU *cannot be installed onto the RF88.*
Remove the hand strap of the device before installing it onto the RF88.

1. Put the PM95's top side to the sled bracket first.
2. Push the bottom side to engage the device firmly.

Figure 13 Installing PM95



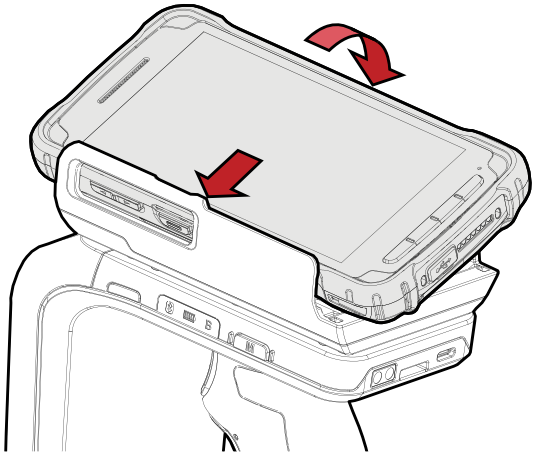
Getting Started

PM90 Installation

Caution: PM90 MSR SKU *cannot be installed onto the RF88.*
Remove the hand strap of the device before installing it onto the RF88.

1. Align the sled bracket of the RF88 to match the button holes to the PM90 buttons.
2. Place the one side of the PM90 to the bracket first.
3. Push the other side to engage the devices firmly.

Figure 14 Installing PM90



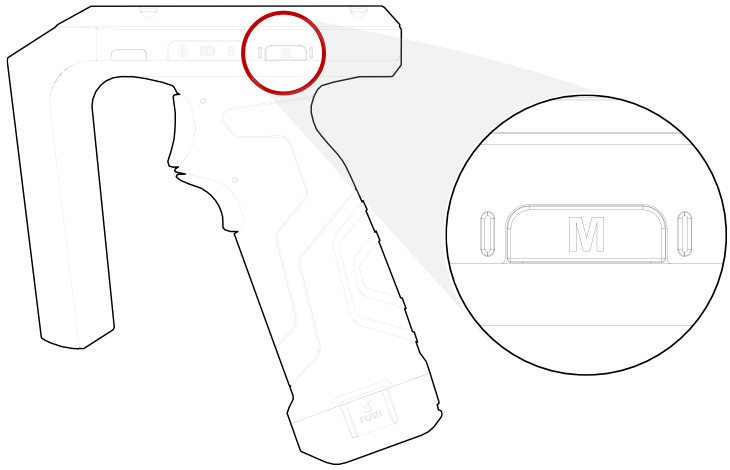
Getting Started

Changing connection mode

Setting up the connection mode is required between the Bluetooth or Wire in case of the connection between an RF88 and a PM90 (when a PM90-exclusive sled bracket is assembled).

To change the connection mode, press the mode button twice quickly.

Figure 15 RF88 mode button



You can check the current connection mode by the RF88's LED indicator.

- In Bluetooth mode (Default): Bluetooth LED blinks
- In Wire mode: Power LED lights up in a color based on the current battery level

Refer to Status Indication > Connection section for more detail.

RFID Control (V2) Application

Introducing RFID Control

Note: *You can find the latest guide of the RFIDControl from the Knowledge Base website (Log-in required)*

The new RFID Control is a Point Mobile RFID solution app for RF88. The app can be run on the Android host device.

With RFID Control, you can perform the following features.

- Connecting a RFID reader
- Configuring RFID reader configurations
- Demonstrating RFID tags reading
- Updating RFID reader firmware

Installing RFID Control (V2)

Access the Service Portal and go to the **Download** board > **EmKit) RFID Control Apps & Guide** to find the RFID Control (V2) app.
(If you don't have the credential of the portal site, request the app to your local reseller.)

To install the app (described based on the Point Mobile devices),

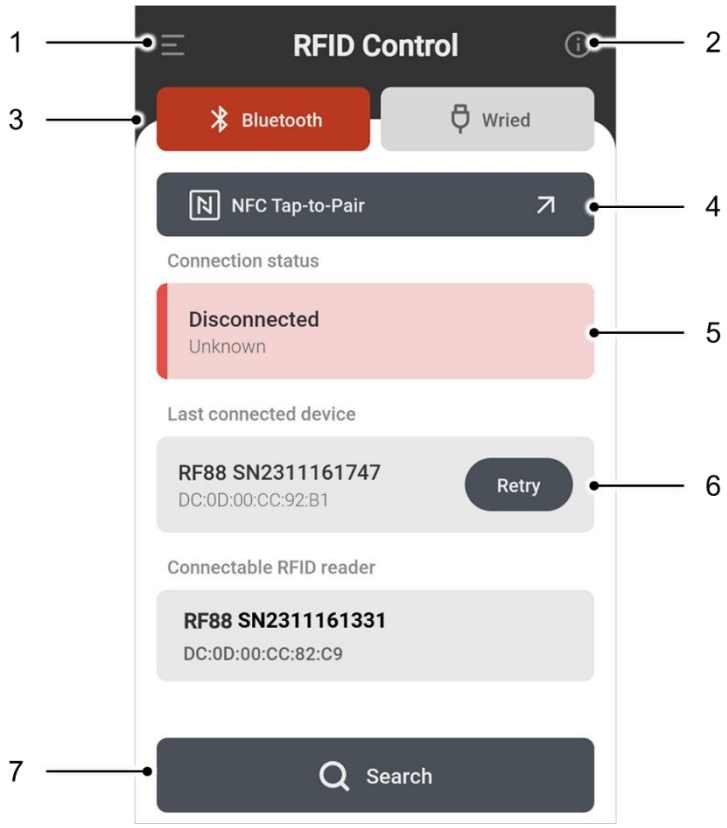
1. Connect the host device to be connected with the RF88 to PC using a USB cable.
2. Set the USB preference option as **File Transfer** or **Transfer files**.
3. Access the device storage from PC.
4. Copy the RFID Control (V2) app file (apk file) to the device storage.
5. Launch the file explorer on the device.
6. Select the app file and install it.

RFID Control (V2) Application

Exploring RFID Control (V2)

When launching the app, the following main screen will be displayed.

Figure 16 RFID Control main screen

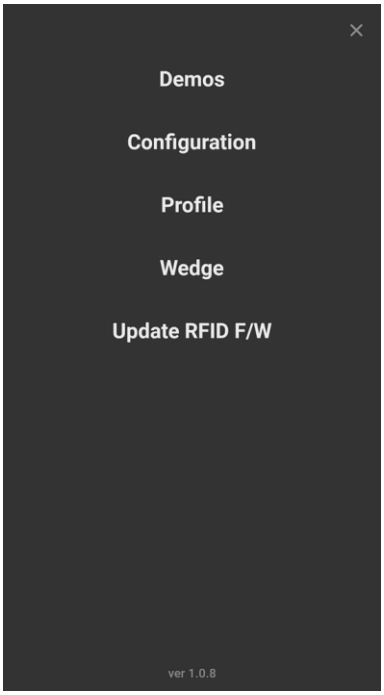


No	Name	Description
1	Additional menus	Tap to open the additional menus.
2	Version	Tap to see the app version.
3	Connect type	Automatically switches between Bluetooth and Wire depending on whether a host device capable of a wire connection is attached.
4	NFC Tap-to-Pair	(Only displays on Bluetooth type) Tap to move to the NFC Tap-to-Pair screen.
5	Connection status	Displays the current connection status.
6	Last connected device	(Only displays on Bluetooth type) Displays the last connected device information, and provides Retry button.
7	Search	(Only displays on Bluetooth type) Tap to search the nearby RFID readers.

RFID Control (V2) Application

The additional menus provide the following features.

Figure 17 RFID Control - Additional menus



Menu	Description
Demos	Demonstrate the RFID reading in the various read mode. • Rapid read demo • Reading demo
Configuration	Set the RFID configurations.
Profile	Select or Custom the reading profile.
Wedge	Set the wedge settings
Update RFID F/W	Update RFID-related firmware (RFID reader, RFID module, Bluetooth).

RFID Control (V2) Application

Connecting a Reader and Host Device

A RF88 can be connected to a host device using Bluetooth or a wire connection. This chapter describes how to connect the RF88 to a host device using RFID Control app.

Bluetooth Connection

All host devices support the Bluetooth connection with RF88 by searching RFID reader or NFC Tap-to-Pair.

Choose more comfortable way referring to the description below.

- Searching RFID reader: Normal pairing and connection process with manual steps on the app
- NFC Tap-to-Pair: Easy and automatic pairing and connection process with a single tap

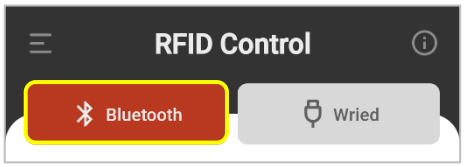
Searching RFID reader

Search the nearby RFID readers and connect one of them through RFID Control app.

To use this method,

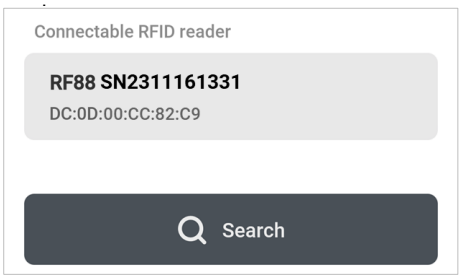
1. Turn on the RF88.
2. Launch the RFID Control without attaching the host device onto the RF88's sled bracket.
3. (Only with PM90 sled bracket) Check if the RF88's Bluetooth LED blinks. It means the reader is in Bluetooth mode. If not, change the connection mode by pressing the mode button twice quickly.
4. Check if the connect type is **Bluetooth**.

Figure 18 RFID Control - Connect type



5. Tap **Search** on the bottom of the screen.
6. When the RF88 name appears under the **Connectable RFID reader** list, tap the name.

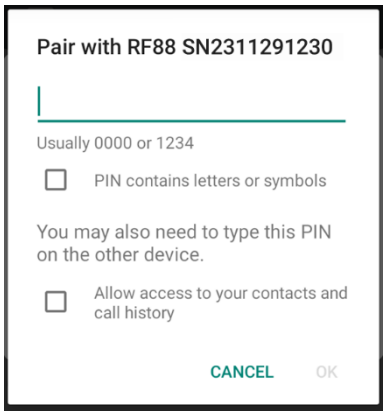
Figure 19 RFID Control - Searching RFID



RFID Control (V2) Application

7. Enter the pairing code **0000** into the pairing confirmation dialog.

Figure 20 RFID Control - Pairing dialog



8. Wait until the connection establishes properly.
9. Check the below items to confirm the connection.
   - The RF88's name displays under the **Connection Status** section
   - The Bluetooth LED of the RF88 turns on blue
   - The Power LED of the RF88 turns on in a color based on the current battery level

Figure 22 RFID Control - RF88 connected

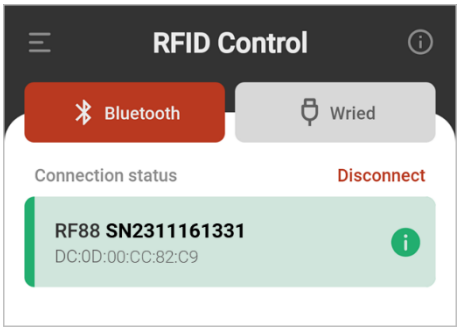
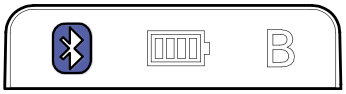


Figure 21 RF88 LED Indicator - Bluetooth



RFID Control (V2) Application

NFC Tap-to-Pair

An NFC tag for Bluetooth connection is embedded on the bottom side of the RFID antenna of the RF88.

Tap-to-Pair uses NFC feature. It connects RF88 and the host device just by getting them close while the RFID Control is running.

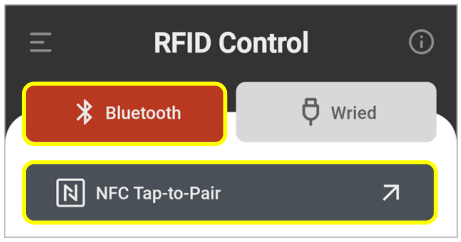
Note: *NFC feature on a host device is enabled by default. But if it is turned off, enable NFC by one of the below ways.*

- ***Settings*** *>* ***Connected devices*** *>* ***Connection preferences*** *> NFC > enable switch*
- *Open Quick setting panel > enable* ***NFC***

To use this method,

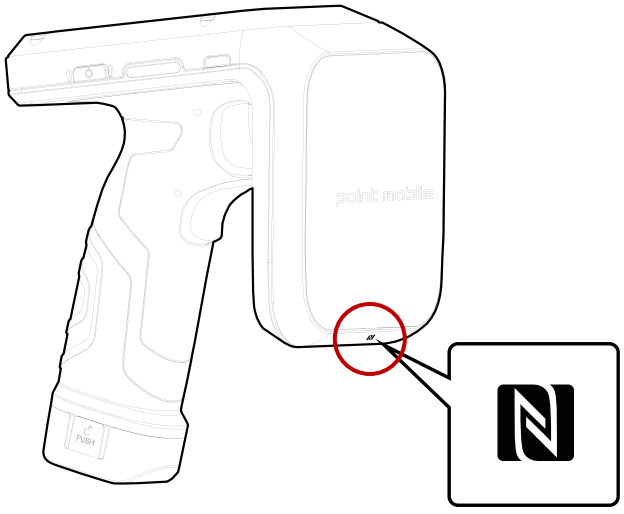
1. Turn on the RF88.
2. Launch the RFID Control without attaching the host device onto the sled bracket.
3. (Only with PM90 sled bracket) Check if the RF88's Bluetooth LED blinks. It means the reader is in Bluetooth mode. If not, change the connection mode by pressing the mode button twice quickly.
4. Check if the connect type is **Bluetooth**.
5. (Can skip) Tap **NFC Tap-to-Pair**.

Figure 23 RFID Control - Connect type & Tap-to-Pair



6. Bring the host device's NFC tapping area close to the NFC tag location of RF88 (refer to the below figure).

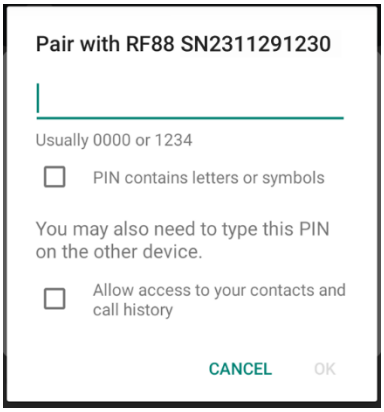
Figure 24 RF88 NFC tag location



RFID Control (V2) Application

7. Enter the pairing code **0000** into the pairing confirmation dialog.

Figure 25 RFID Control - Pairing dialog



8. Check the below items to confirm the connection.
   - The RF88's name displays under the **Connection Status** section
   - The Bluetooth LED turns on blue
   - The Power LED turns on in a color based on the current battery level

Figure 26 RFID Control - RF88 connected

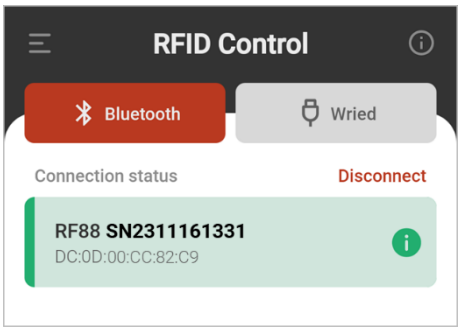
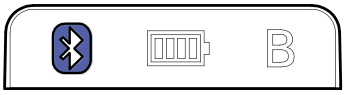


Figure 27 RF88 LED Indicator - Bluetooth



Notice: *If failed to connect, wake up the RF88 from sleep mode by pressing any button on the reader and try again.*

RFID Control (V2) Application

Wire Connection

The wire connection connects the RFID reader and the host device physically using pogo pin connectors.

Except for PM85, all compatible host devices manufactured by Point Mobile can use the Wire connection.

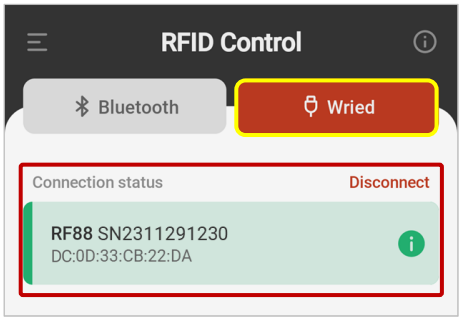
A host device's model-exclusive sled bracket must be assembled onto the RFID reader to connect the host device and the reader physically.

Notice: *PM85 and the host devices not manufactured by Point Mobile do not support the wire connection.*

To establish a wire connection,

1. Assemble the proper sled bracket referring to Sled Bracket Replacement.
2. Turn on the RF88, and launch RFID Control on the host device.
3. (Only with PM90 sled bracket)
   Check if the RF88's Power LED lights up in a color based on the battery level. It means the reader is in Wire mode. If not, change the connection mode by pressing the mode button twice quickly.
4. Install the host device onto the sled bracket referring to Host Device Installation.
5. The host device and RF88 will be connected automatically.
   Check the below items to confirm the connection.
   - The RF88's name displays under the **Connection Status** section
   - The Power LED turns on in a color based on the current battery level

Figure 28 RFID Control - Connect type (Wire)



If the wire connection is not established automatically, tap **Connection** on the bottom.

RFID Control (V2) Application

Disconnect

In one of the following cases, the connection will be disconnected.

- Common in Bluetooth / Wire connection
  - Tap **disconnect(ion)** button in the RFID Control app
  - Close the RFID Control app
  - Turn off the RF88 or the host device.
  - (Only with PM90 sled bracket) Change the connection mode
- In Bluetooth connection
  - Disable Bluetooth
  - A host device capable of a wire connection (except PM90) is attached onto the RF88
    (The Bluetooth connection will be switched to wire connection)
- In Wire connection
  - Detach the host device from RF88

Reconnect

To reconnect to the last connected RF88,

- Bluetooth connection: Tap **Retry** button under the **Last connected device** from the RFID Control app.
- Wire connection: Attach the host device again onto the RF88's sled bracket

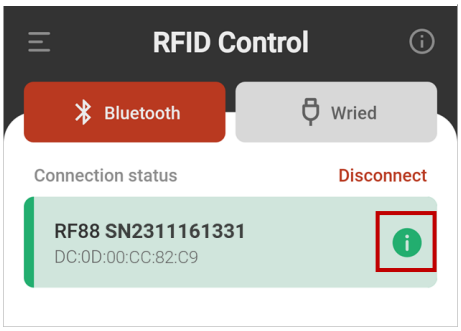
Note: *All host devices capable of a wire connection (except PM90) will be reconnected automatically when attached. In case of PM90, you must reconnect manually in the app.*

RFID Control (V2) Application

RFID Reader Information

After connecting a RFID reader, tap to check the connected reader's information.

Figure 29 RFID Control - Reader information



The following information is provided.

Figure 30 RFID Control - Reader Information (detail)

- RFID info
  - Firmware version
- Hardware info
  - Firmware version
  - Battery status
    - Battery charge status
    - Battery level
    - Battery health

RFID Control (V2) Application

    - Battery voltage
    - Battery temperature
- Bluetooth info
  - Firmware version
  - Device Name
  - Mac address
  - Power class

RFID Control (V2) Application

Applying Configurations

There are two ways to update the RFID configurations. One way uses RFID Control app interface, and another uses configuration JSON file.

Find optimized way to your working routine referring to the below table.

✓ Wants to change a few configurations immediately ✓ Wants to change the configurations of the currently connected RFID reader only	→	**Setting up directly / Select preset profile**
✓ Wants to change a lot of configurations at once ✓ Wants to save the managed configurations and apply all the connected RFID readers	→	**Setting up using JSON**

Refer to the Configurations chapter to see the available configurations.

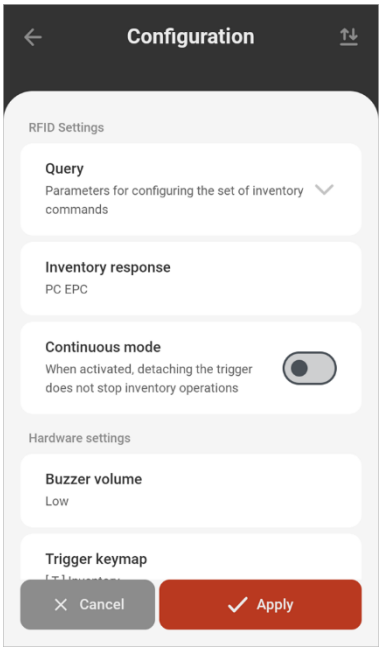
Setting up directly

Connect the RFID reader you use with the host device, and change the configuration using the RFID Control.

To use this method,

1. Launch RFID Control and connect a RFID reader you use.
2. Access **Configuration** or **Wedge** from the additional menus.
3. Adjust the configurations and wedge settings as you want.
4. Tap **Apply** to save the changes. Or you can reset the changes by **Cancel** button on the bottom.

Figure 31 RFID Control - Configurations



RFID Control (V2) Application

Select preset profile

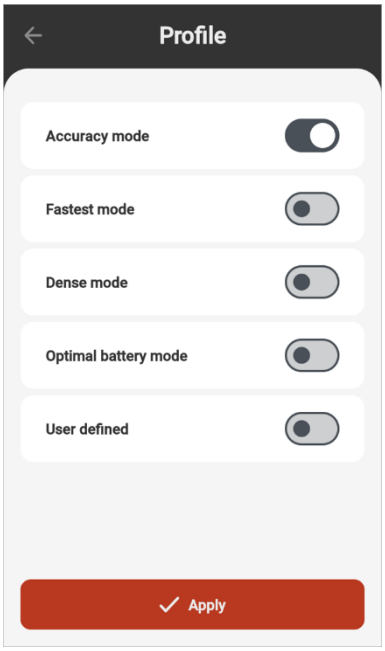
There are preset profiles containing inventory parameter and radio power configurations. You can set the configuration easily with the profile optimized for your use case.

To select a profile,

1. Launch RFID Control and connect a RFID reader you use.
2. Access **Profile** from the additional menus.
3. Select a profile.

   If you select the User defined profile, set the detailed configurations.

   Figure 32 RFID Control - Profile



4. Tap **Apply** to save the changes.

RFID Control (V2) Application

Setting up using JSON

Make a configuration JSON file and apply it through RFID Control app.

Depending on whether the update continues or not, choose between the auto update and manual update.

✓ Wants to apply the configurations immediately & once	→	**Manual Update**
✓ Wants to apply the configurations every time a RFID reader is connected	→	**Auto Update**

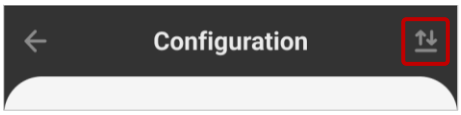
Notice: *Wedge settings do not support the setup through JSON files.*

Manual update (Import JSON file)

If you want to update the configurations immediately and once,

1. Prepare a JSON file using one of the following ways.
   - Create a JSON file using RFIDControl Configuration Tool (V2). Refer to Making Configuration JSON File (Config Tool).
   - Export a configuration of another RFID reader. Refer to Export Configurations.
2. Copy the JSON file to the host device.
3. Launch RFID Control and connect a RFID reader you use.
4. Access **Configurations** from the additional menus, and tap ⇅ on the title section.

   Figure 33 RFID Control - Configuration title

5. Tap **Import**

   Figure 34 RFID Control - Import / Export

6. Select the JSON file you copied. The configuration will be changed the same as the JSON file.
7. Tap **Apply** to save the changes.

RFID Control (V2) Application

Auto update

If you want to update the configurations every time a RFID reader is connected,

1. Prepare a JSON file using the RFIDControl Configuration Tool (V2) with the Auto update enabled.
   Refer to Making Configuration JSON File (Config Tool).
2. Copy the JSON file to the host device with the following rules.
   - **File location: /Download folder**
   - **File name: RF88-Configuration.json**
3. Launch RFIDControl and connect a RFID reader.
4. The auto update will be performed every time a RFID reader is connected to the host device.

RFID Control (V2) Application

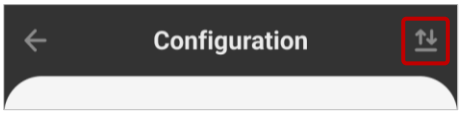
Export Configurations

Export the configuration of the currently connected RFID reader as a JSON file.

Notice: *Exporting is only available on Configuration values. Wedge settings won't be exported.*

1. Go to **Configuration** from the additional menus.
2. Tap ⇅ on the title section.

Figure 35 RFID Control - Configuration title



3. Tap **Export** and wait for completion.

Figure 36 RFID Control - Import / Export

4. The file will be saved into the following location and name.
   - Location: **Download folder (/storage/emulated/0/Download/)**
   - File name: **RF88-Configuration.json**

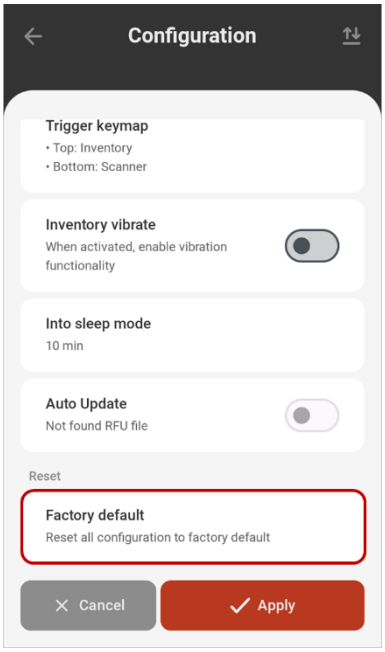
RFID Control (V2) Application

Reset Configurations

Reset the configurations (except Wedge settings) to the factory default values.

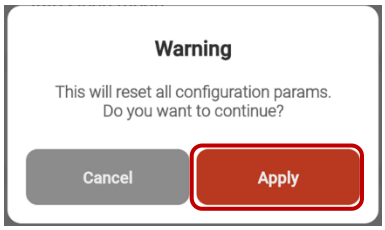
1. Go to **Configuration** from the additional menus.
2. Select **Factory default**.

Figure 37 RFID Control - Factory default



3. Tap **Apply** to reset the configurations to factory default values.

Figure 38 RFID Control – Reset confirm dialog



RFID Control (V2) Application

Updating Firmware

To improve the performance of RFID reader, Point Mobile provides up-to-date firmware.

The firmware files are provided as RFU file format, and it contains RFID reader, Bluetooth, and RFID module firmware.

Notice: *To update the firmware, RFID reader must be connected using Bluetooth.*

Check items

- Download the firmware file (**RFU file**) from Service Portal
- Copy the firmware file to the host device.
- Connect RFID reader and host device using Bluetooth for firmware update.

Update Method

There are two ways to update the RFID reader's firmware. Find optimized way to your working routine referring to the below table.

✓ Wants to update the connected RFID reader's firmware immediately & once	→	**Manual Update**
✓ Wants to update every RFID reader's firmware automatically	→	**Auto Update**

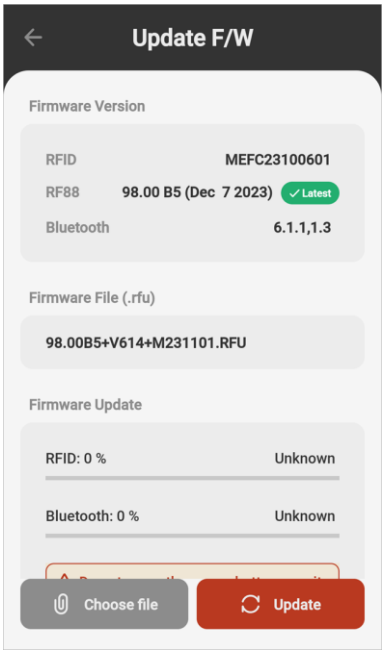
RFID Control (V2) Application

Manual update

If you want to update the firmware immediately and once,

1. Launch RFID Control and connect a RFID reader you use.
2. Access **Update RFID F/W** from the additional menus.
3. Tap **Choose File** to select the RFU file you prepared.
4. Under the **Firmware Version** section, you can see whether the current firmware is older than the versions in the RFU file. Only the firmware(s) not marked as latest will be updated.

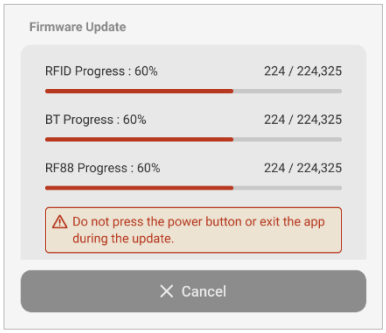
Figure 39 RFID Control - Update RFID F/W



5. Tap **Update**.
6. Wait until the update process is done.

   During the update process, the Bluetooth may be disconnected and reconnected several times.

Figure 40 RFID Control - Updating firmware



Caution: *Do not turn off or disconnect the RF88 until the update is completed.*

RFID Control (V2) Application

Auto update

If you want to update the firmware every time a RFID reader is connected,

1. Prepare a JSON file using the RFIDControl Configuration Tool (V2) with the Auto update enabled and specified RFU file. Refer to Making Configuration JSON File (Config Tool).
2. Copy the JSON file and firmware file (.RFU file) to the host device with the following rules.
   - **File location: /Download folder**
   - **JSON file name: RF88-Configuration.json**
   - **Firmware file name: Same as the name in the JSON file**
3. Launch RFIDControl and connect a RFID reader.
4. The auto update will be performed every time a RFID reader is connected to the host device.
   If the latest version is already installed, RFIDControl will skip the update of that firmware type.

Caution: *Do not turn off or disconnect the RF88 until the update is completed.*

RFID Control (V2) Application

Making Configuration JSON File (Config Tool)

The easiest way to make an RFID Configuration JSON file is using RFIDControl Configuration Tool (hereinafter, Config Tool).

You can make a JSON file including Auto update settings as well as RFID configurations.

Note: *Point Mobile recommends using Chrome browser for using the Config tool.*

How to Use Config Tool

1. Download the Config Tool from Service Portal.
2. Unzip the **ConfigurationTool.zip** file, and execute **index.html** in the folder.
3. Configure the RFID, Hardware, and Auto update settings.

   Refer to Auto Update for more detail about Auto update setting.
4. Generate JSON file by **Export** on the top.

   Figure 41 RFIDControl Configuration Tool - Export

5. Copy the JSON file to the internal storage of the host device.

   Notice: *If you want to perform the auto update, must follow the rules of the file name and location as follows.*

   - *File name: RF88-Configuration.json*
   - *File location: /Download/*
6. Apply the settings through RFIDControl manually or automatically. Refer to each chapter.
   - Applying Configurations
   - Updating Firmware

Available Configurations

RFID Settings and Hardware Settings sections are available. Refer to Configurations to see the detail description.

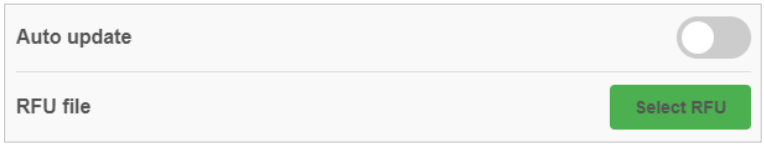
RFID Control (V2) Application

Auto Update

Auto update setting can be set only with a JSON file.

When you enable the auto update, the configuration and firmware will be updated as you specified every time you connect the RFID reader with host device.

Figure 42 RFIDControl Configuration Tool - Auto update setting



How to set

Turn on the **Auto update** switch to enable the auto update feature.

When you want to update firmware too, select the firmware file to the **RFU file**, and copy the file to the **Download folder** as same with JSON file. You can download the firmware file from Service Portal.

If there is not selected RFU file or no RFU file with same name specified in the Download folder, only the configurations will be updated.

Notice: *When you set auto update, the JSON file must follow the name and location rules as follows.*

- ***File name: RF88-Configuration.json***
- ***File location: /Download/***

RFID Control (V2) Application

Demonstrating RFID reading

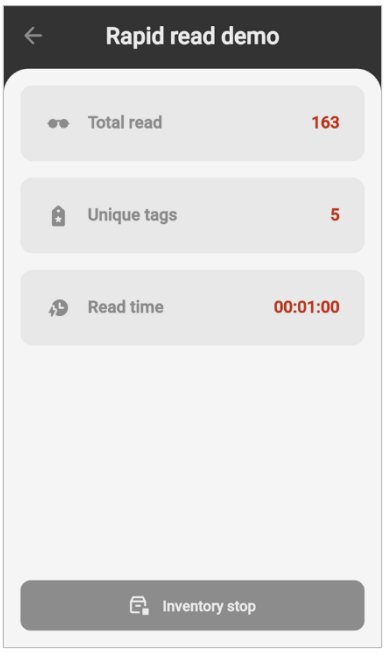
RFID Control provides two types of demo as follows. Navigate to the additional menus and select a demo.

Rapid Read Demo	Demonstrates how fast the RFID reader reads the tag with optimized configuration for rapid reading
Reading Demo	Demonstrates the reading feature with current configurations, and performs various command for one of the read tags.

Note: *To read RFID tags, press the trigger button which is mapped to the RFID reading (inventory) action. Refer to the Trigger keymapping.*

Rapid Read Demo

Figure 43 RFID Control - Rapid read demo



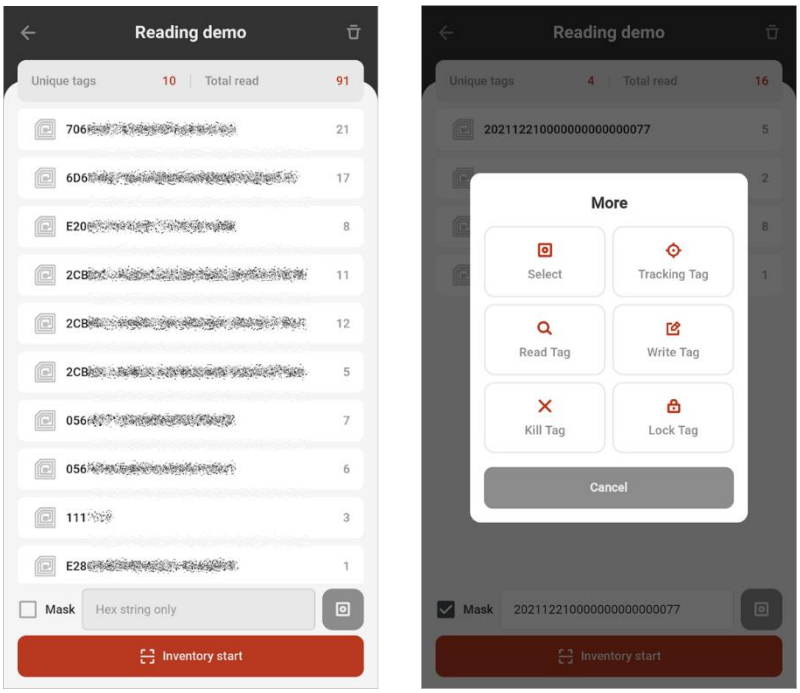
Rapid Read Demo shows how fast the RFID reader reads the tag in continuous read mode with the maximized RFID reading speed configurations:

Aim the tag and then press the trigger button of the RFID reader, or tap **Inventory start** button on the screen. You can see the total read count, the number of unique tags (excluding duplicates) and read time in the demo screen.

RFID Control (V2) Application

Reading Demo

Figure 44 RFID Control - Reading Demo



Demonstrate the tag reading with the current RFID reader configurations. When tapping a tag from the read list, you can see more features.

Aim the tag and then press the trigger button of RFID reader of tap the **Inventory start** button on the screen.

Mask option

You can filter the tag to be read by **Mask** option. Select a tag data from the read list and access Select command. Or tap  next to the Mask option

Select the option and enter the hex strings to be filtered. Only the tags including the entered strings will be read.

More features

Tap a tag read, and then select an advanced feature among the Select, Tracking Tag, Read Tag, Write Tag, Kill Tag, and Lock Tag. You can find the detailed guides from RFID Control (V2) Web Guide (Log-in required).

Configurations

RF88 supports the following configuration types. To control the configurations, use RFID Control (V2) app.

Configuration

RFID Settings

Query

RFID readers command tags in an inventory round to choose the random number from the range 0 ~ 2^{Q}-1 and singulates the tag that has a zero.

Because the reader cannot read either tag if multiple tags have the same number (collision), the Q value shall change according to the number of tags.

To increase or decrease the Q value automatically depending on the tag response, set value criteria and amount of change.

Setting	Range / Options	Default
Start Q	0 ~ 15	7
Min Q	0 ~ 15	0
Max Q	0 ~ 15	15
Q Increment	On / Off	Off
Q Decrement	On / Off	Off
Fixed Q	On / Off	Off

Configurations

Inventory response

Set parameters for configuring the set of SELECT commands.

- Options:
  - PC EPC
  - EPC ONLY
  - PC EPC CHECKSUM
  - PC EPC RSSI
  - PC EPC FREQUENCY
  - SHOW ALL
- Default: PC EPC

Continuous mode

Read RFID tags continuously at one triggering.

- Options: On / Off
- Default: Off

Configurations

Hardware settings

Buzzer volume

Adjust the buzzer volume of RF88.

- Options: Disable / Low / High
- Default: High

Trigger keymap

Map the inventory or scanner triggering to the top / bottom trigger buttons.

- Options: Inventory / Scanner
- Default:
  - Top: Inventory
  - Bottom: Scanner

Inventory vibrate

Turn on or off the vibration when reading RFID tags.

- Options: On / Off
- Default: Off

Into sleep mode

Set the timeout that RFID reader enters sleep mode.

- Options:
  - Disable
  - 1 ~ 30 min
- Default: 10 min

Configurations

Profile

The four profiles are predefined. Select a profile or a user defined profile and set the detailed configurations.

		Accuracy mode (Default)	Fastest mode	Dense readers	Optimal battery	User defined
Power		30.0 dBm	30.0 dBm	30.0 dBm	27.0 dBm	30.0 dBm
Inventory Param	**Session**	S1	S1	S1	S1	S1
	Flag	A	AB	A	A	A
	Link Profile	11: 13-285	03: NA-120	09: 05-241	09: 05-241	10: 07-244

Accuracy mode

This mode only reads the tag within the state A fast. This mode can be useful for a use case needing perfect inventory management.

Fastest mode

This mode reads the RFID tags including the multiple tags fast. This mode can be useful where inventory runs out quickly and orders are placed multiple times daily.

Dense readers

This mode is helpful when the RFID readers are used nearby. This mode can be useful for using multiple RFID readers that must operate independently of each other.

Optimal battery

This mode uses low radio power (27.0 dBm) to save the battery. But, in low radio power, the reading distance may become shorter.

Configurations

User defined

You can custom the following configurations.

Power

Set RFID antenna power.

- Range: 0 ~ 30.0 (dBm)
- Default: 30.0 dBm

Session

Set the session with tags to be inventoried.

- Options: S0 / S1 / S2 / S3
- Default: S1

Inventory flag

Set the inventoried flag (state) for tags, indicating whether a tag may respond to a RFID reader. RFID readers typically inventory tags from A to B followed by a re-inventory of tags from B back to A (or vice versa).

- Options:
  - AB (Dual target)
  - A
  - B
- Default: A

Configurations

Link Profile

Select the profile to be used by the reader.

- Options:

Link Profile	Mode Optimization	Forward Link Modulation	Tari (µs)	PIE	BLF (kHz)	Backscatter Link Modulation
01: NA-103	Read Rate	DSB	6.25	1.5	640	M1
02: 11-302	Read Rate	PR	7.5	2	640	M1
03: NA-120	Read Rate	DSB	6.25	1.5	640	M2
04: 1-323	Read Rate	PR	7.5	2	640	M2
05: NA-345	Read Rate	PR	7.5	1.5	640	M4
06: 15-344	ET-UB (D)	PR	15	2	640	M4
07: 12-223	ET-LB	PR	15	2	320	M2
08: 03-222	ET-LB	PR	20	2	320	M2
09: 05-241	ET-LB (D)	PR	20	2	320	M4
10: 07-244	FCC (D)	PR	20	2	250	M4
11: 13-285	Sens	PR	20	2	160	M8

- Default: 10: 07-244

Configurations

Wedge

Result Type

Set the result type of inventoried data.

- Option: None / Custom intent
- Default: None

Custom Intent

Configure the custom intent to broadcast the inventory data to other apps.

Setting	Default name
Action	EXTRA_EVENT_ACTION
Category	EXTRA_EVENT_CATEGORY
Extra name	EXTRA_EVENT_EXTRA_NAME

Terminator

Select terminator on the end of the inventoried data.

- Option: None / Space / CR / LF / CRLF
- Default: None

Reading RFID Tags / Barcodes

RF88 can trigger the RFID tag reading and barcode scanning with two trigger buttons. The triggering for each button is changeable using RFID Control (V2) app.

Reading RFID Tags

The upper trigger button is mapped to the RFID reading as default.

Figure 45 RF88 upper trigger button

After connecting with a host device or entering the batch mode, read RFID tags. Aim the tag area and then press the trigger button of RF88.

Normal reading

The RFID reader reads tags while the trigger button is pressed.

Continuous reading

Continuous mode performs the RFID tag reading continuously. If the RFID reader is in continuous mode, the notification LED blinks slowly in amber.

The RFID reader starts reading when the trigger button is **pressed twice** in the continuous mode.

The RFID reader can enter the continuous mode by RFID Control (V2) app. Refer to Continuous mode.

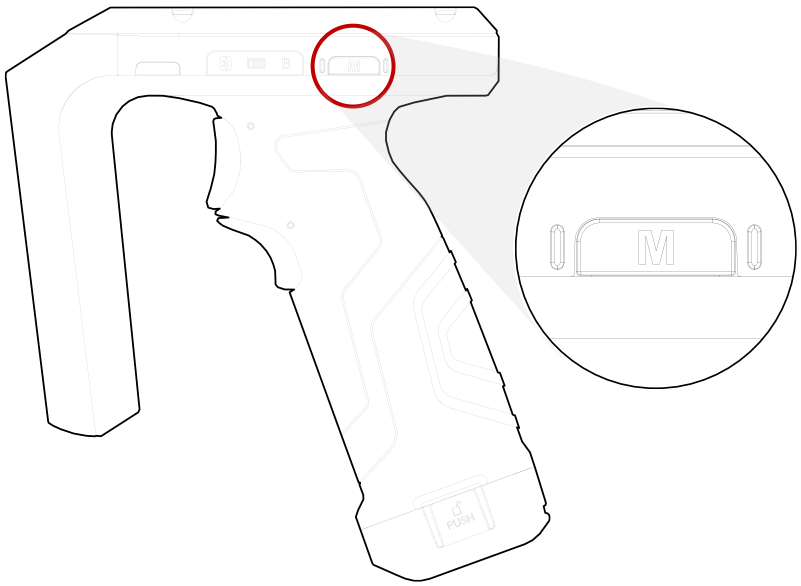
Reading RFID Tags / Barcodes

Batch mode

Batch mode is a function that collects tag data in the RFID reader's internal memory and sends it to the host device at once when a host device is connected.

To turn on the batch mode, press the mode button for 3 seconds. When the batch mode activates, the batch mode LED turns on amber.

Figure 46 RF88 mode button



Reading RFID Tags / Barcodes

Reading Barcodes

RF88 can trigger the barcode scanning of the connected host device. When press the scanning trigger button, the scanner beam of the host device emits and read aimed barcodes. The scanning trigger is mapped to the lower trigger button by default.

Figure 47 RF88 lower trigger button

Changing Trigger Mapping

Change the mapped triggering for the upper and lower trigger button by RFID Control (V2) app.

By default, the trigger buttons are designated as follows.

- Upper trigger button: Reading RFID tags
- Lower trigger button: Scanning barcodes (Read by host device)

To change the button features, refer to Trigger keymapping chapter.

Accessories

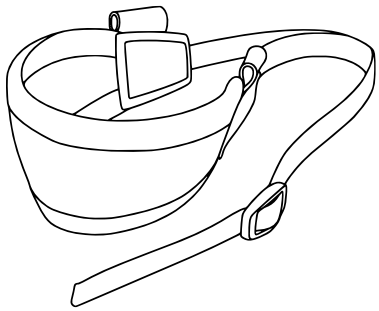
RF88 supports below accessories. All accessories except hand strap are sold separately.

Category	Accessory Name	Usage
Hand strap	Hand strap	Carries RF88 easily
Charging cradle	SSC (Single Slot Cradle)	Charges one RF88 with a host device installed.

Hand Strap

The hand strap is enclosed in the RF88 standard package. Attach the strap and you can grab the reader more firmly.

Figure 48 Hand strap

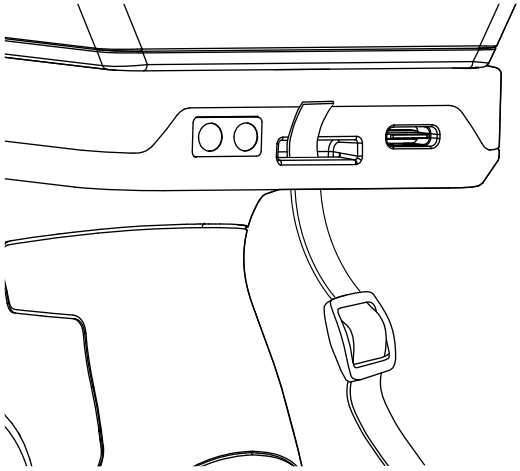


Accessories

Attach hand strap

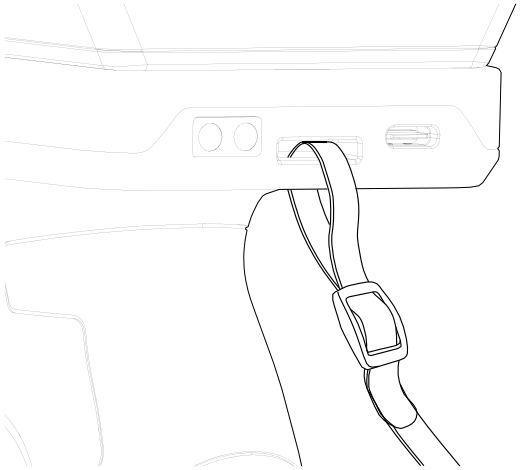
1. Thread the strap through the hand strap hole next to the USB connector.

Figure 49 Attaching hand strap



2. Slide the strap through the buckle at the appropriate length.

Figure 50 Attached hand strap



Accessories

Charging cradle

Single Slot Cradle / Single Slot Ethernet Cradle (SSC / SEC)

Charge the RF88 with one of the following host devices installed through the cradle (Optional accessory).

- PM85
- PM86
- PM84
- PM95

Place the device onto the cradle. RF88 and the installed host device will be charged simultaneously when charging with SSC/SEC.

Safety Information

Battery Safety Information

Follow the battery safety guidelines for safe usage, storage, and disposal of Li-ion batteries. Improper battery use may result in a fire, explosion, or other critical hazards.

Battery Safety Guidelines

- Use only Point Mobile approved batteries and charging accessories. Other batteries and chargers may damage the device or result in a fire, leakage, or other hazards.
- Do not expose the battery to excessive heat or cold.
- Do not use or store the battery in or near areas that might get very hot, such as in a parked vehicle, near a heat duct or close to other heat sources.
- Do not allow objects that may cause a short circuit, such as metal objects, corrosive substances, or liquids like water, to contact the battery.
- Do not disassemble, crush, bend, shred, press, or other actions that may damage or deform the battery.
- Do not use or replace the battery on the go or from a high location. Dropping may result in an explosion or fire.
- Do not put any labels, stickers, tags, etc. on the device or battery. Performance of the device or battery, such as sealing, drop, or tumble, could be affected.
- Close supervision is necessary when used near children to avoid the risk of injury.
- If battery leakage is observed, avoid any contact with the skin or eyes and properly dispose of the battery. If contact has been made, wash the affected area with water for 15 minutes and seek medical advice.
- If you notice any type of damage to the battery, such as swelling, dents, and leaks, stop using it immediately and contact Point Mobile.

Battery Charging Guidelines

- Charge the battery in a clean, cool, dry, and ventilated environment.
- Separate the charger from the battery as soon as possible when the battery is fully charged.
- Battery performance can degrade due to the stress of daily charging and discharging. Batteries typically need to be replaced after 300 to 500 charging cycles (full charge-discharge cycles) or when the battery capacity has been reduced to 70 ~ 80% of its original capacity. The actual number of charging cycles varies based on usage patterns, temperature, age, and other factors.

Safety Information

Battery Storage / Disposal Guidelines

- Store the batteries in a clean, dry and ventilated environment within ambient temperature ranges of 20±5℃.
- For safety regulations, batteries are charged to below 20~30% of full capacity during production.
- When not using batteries for a long period, charge the battery for 30 minutes to 1 hour at least once every 6 months to prevent full discharge and keep the performance.
- Batteries should be stored separately when storing for long periods. Disconnect from any device, charger, or cradle.
- Dispose of used batteries promptly according to local disposal regulations.
- Do not dispose of the battery in fire. It may cause explosion.

Notice: *The battery is consumable. Point Mobile provides a warranty for the battery for 12 months after purchase. If you suspect the battery swelling, change the battery immediately and contact Point Mobile.*

Point Mobile. Co., Ltd.

Offline

Tel: +82-2-3397-7870~1
Fax: +82-2-3397-7872
Address: 26F, Building A, Gasan Publik,
178, Digital-ro, Geumcheon-gu, Seoul, Korea 08513

Online

Website: https://www.pointmobile.com
E-mail : pm_ta@pointmobile.com