POINT Mobile

UHF RFID SLED for PM30

RF300

User Manual

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Instruction

RF300 is a UHF RFID sled for PM30. This manual provides information about basic features and using the RF300. Please read this manual carefully before using your UHF RFID reader to ensure safe and proper use.

Revision History

Revision	Date	Description
V01	08 Apr 2021	Initial release

Related Document

Following documents are related to RF300. Download the documents on Service Portal > Download > RF300 Firmware & Materials.

- RFID Control User Guide – describes how to use the RFID Control and RFID Demo applications.
- RFID Control Configuration Tool User Guide – describes how to use the RFID Control Configuration Tool.

RF300 SKUs

The contents of this manual can cover the following SKUs.

SKU	Part Number	RFID Engine	Location
SKU1	RF300-00RY-2	Impinj® Indy® R2000	EU
SKU2	RF300-00RY-5		US, KR

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Table of Contents

INSTRUCTION 1

Revision History 1

Related Document 1

RF300 SKUs 1

TABLE OF CONTENTS 2

GETTING STARTED 4

Device Parts 4

Product Standard Accessories 5

Charge the Device 6

Charge with AC/DC adaptor 6

Charging with Cradle 7

Turn on/off the Device 8

Replace the Battery 9

LED Indicator 10

Install PM30 11

CONNECTING PM30 12

Install the RFID Control App 12

Connect mode 13

Change connect mode 13

Wired Communication 14

Disconnect 15

Auto reconnect 15

Bluetooth Communication 16

Connect methods 16

Disconnect 21

Reconnect 21

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CONFIGURATION SETTINGS 22
Configuration Detail 22
Apply Configuration 24
Apply via RFID Control 24
Apply via JSON file 25

WEDGE SETTINGS 27
Wedge Detail 27
Apply Wedge 28
Apply via RFID Control 28
Apply via JSON file 28

FIRMWARE UPDATE 29
Auto Update 29
Manual Update 30

READ RFID TAG 31
RFID Demo 31
Read the RFID Tag 32

SCAN A BARCODE 34

SAFETY INFORMATION 35
Battery Safety Information 35

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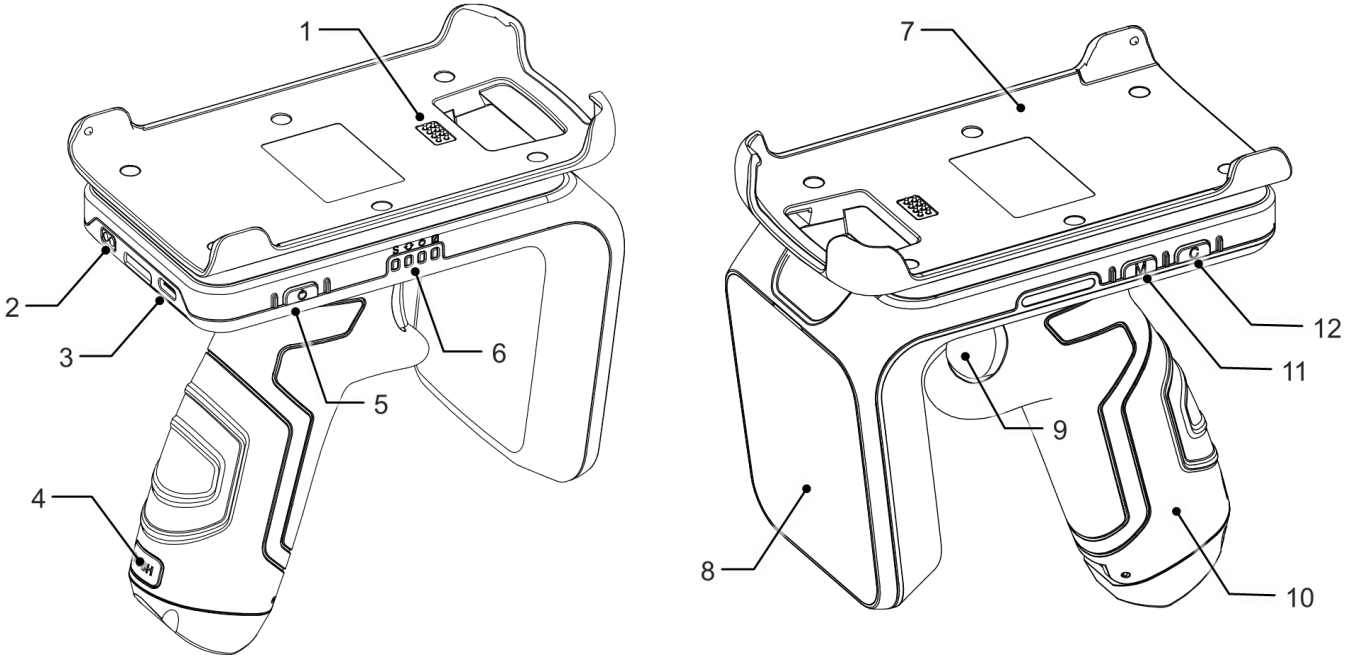
Getting Started

Device Parts

Figure 1 RF300 Views



No	Name	Description
1	PM30 Connector	Connector for communication with PM30
2	Connector for cradle charging	Connector for cradle charging
3	USB Type C connector	USB 2.0 Type C. Plug USB cable to charge the RF300
4	Battery release button	Press to open battery cover and replace the battery
5	Power button	Press and hold to turn on/off the RF300
6	LED indicator	Indicate the status of power, battery charging, connect mode, trigger mode. Find more details in LED Indicator
7	PM30 retention fixture	Install PM30 onto this part
8	UHF RFID antenna	Read RFID tags
9	Trigger button	Read RFID tags or barcode by pressing
10	Battery slot	Open the slot cap by pressing battery release button
11	Trigger mode change button	Press and hold to change trigger mode, barcode scanning or RFID tag reading
12	Connect mode change button	Press and hold to change the connect mode

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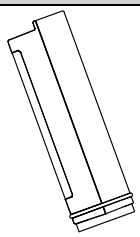
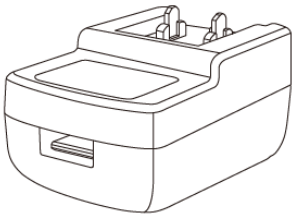
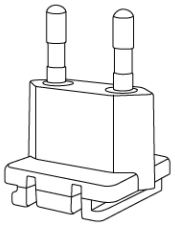
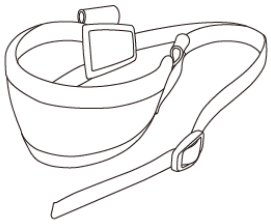
Getting Started

Product Standard Accessories

The following items are in the product box.

Accessory	Name
	Battery pack (Battery may be assembled in the RF300)
	5V / 2A power adapter
	AC plug (EU / KR plug)
	USB type C cable
	Hand Strap

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Getting Started

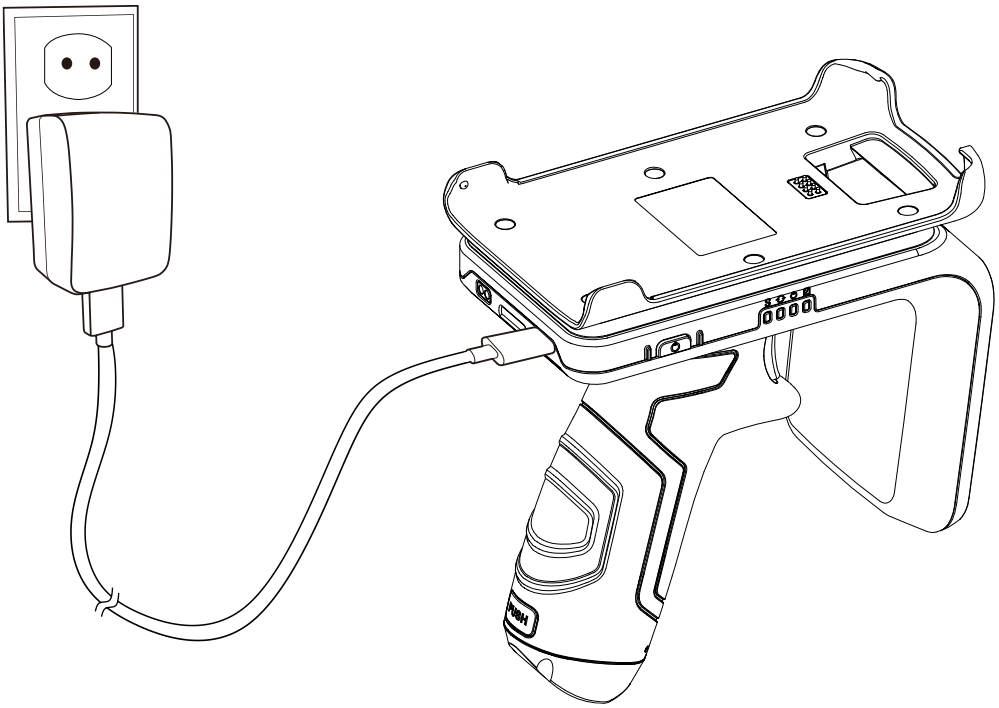
Charge the Device

Caution: *Always use an original charger and cable from Point Mobile. Other chargers and cables may damage RF300. Also, make sure the connector, charger, cable is not wet. Follow the Battery Safety Information for safety of using the battery.*

Charge with AC/DC 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 RF300.
4. Provide power by plugging the power adapter to the power outlet.

Figure 2 Charge RF300



Note: *If the adapter is connected to RF300 with PM30 mounted, RF300 is charged first and PM30 starts charging after RF300 is fully charged. When PM30 starts charging, the charging LED of RF300 will light on yellow.*

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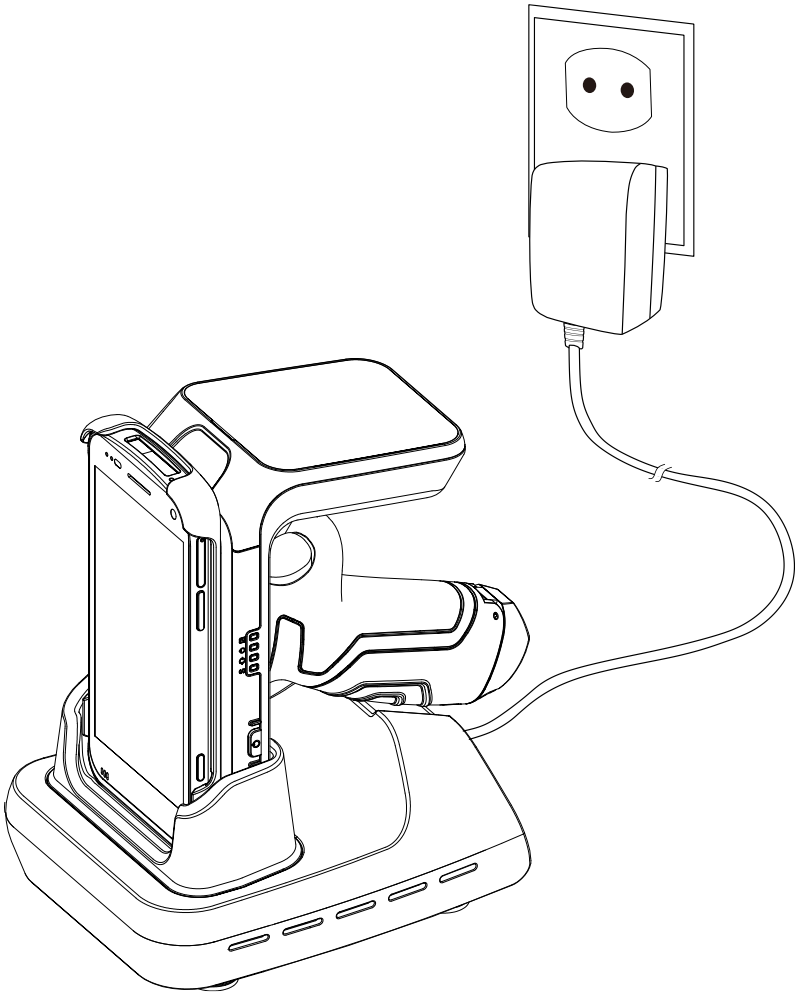
Getting Started

Charging with Cradle

Figure 3 Charging with RF300 and PM30



Charge the RF300 with PM30 mounted through the cradle (Optional accessory: PM30-SSC0, PM30-SSC0-5). Place the device onto the cradle as shown in Figure 3.

Note: *If you use the cradle to charge, PM30 and RF300 will charge at the same time.*

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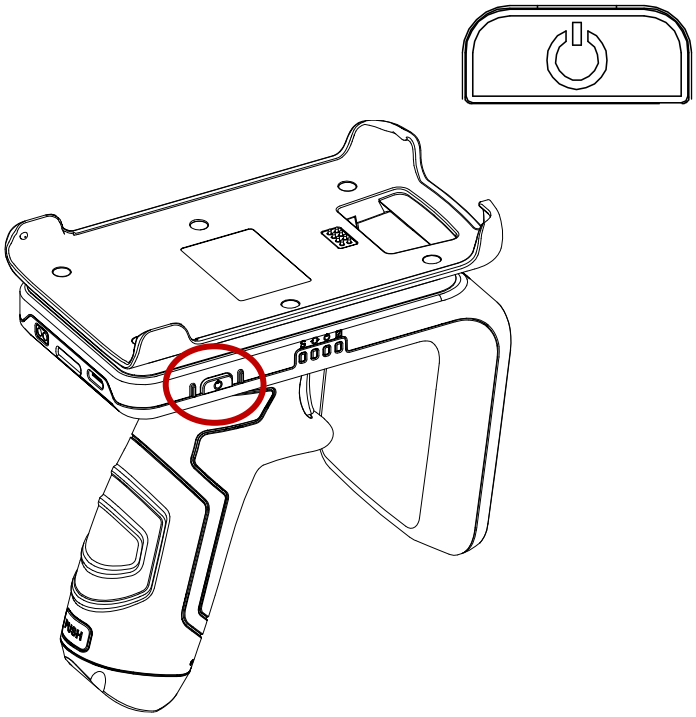
Getting Started

Turn on/off the Device

To turn on or off the RF300, press and hold the power button for 2 seconds (Until the RF300's LED indicator lights on/off).

Figure 4 RF300 Power button



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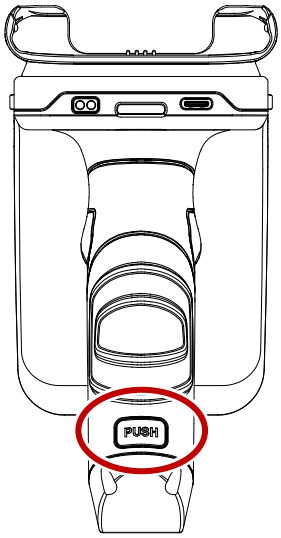
Getting Started

Replace the Battery

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

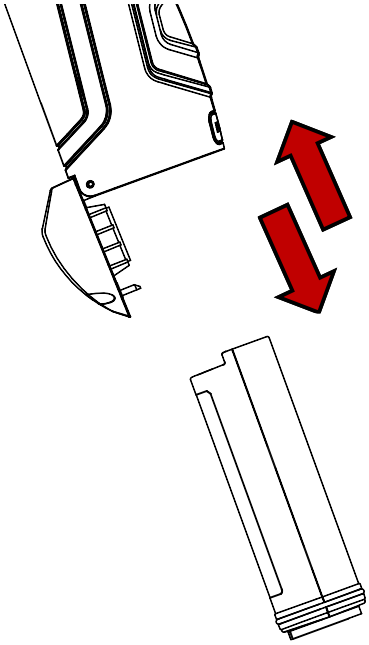
1. Press Battery release button on the back of the handle to open the battery cover.

Figure 5 Battery release button



2. Remove the battery and replace it.

Figure 6 Replace battery



3. Close the battery cover firmly until it clicks.

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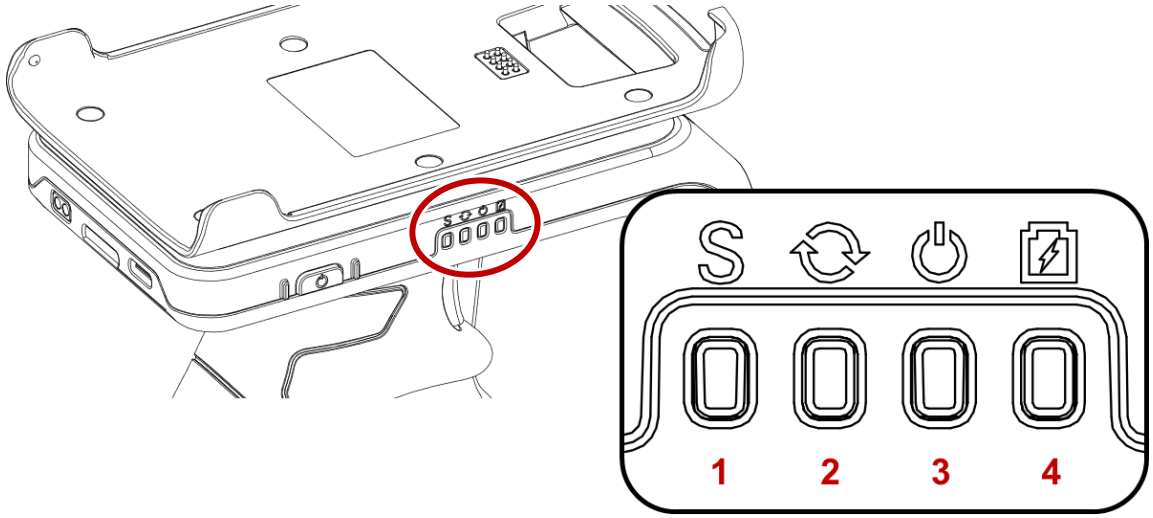
Getting Started

LED Indicator

Figure 7 RF300 LED Indicator



No	Indicator	Status	Indication
1	Trigger-Mode LED	Turned off	UHF RFID mode
		Solid red	Barcode scan mode
2	Connect-Mode LED	Turned off	Wired communication mode
		Solid red	Bluetooth communication mode
3	State LED	Solid red	Power on
		Solid green	Bluetooth or Wired connected
4	Charging LED	Solid red	Charging RF300
		Solid green	RF300 is fully charged
		Solid yellow	Charging PM30
		Alternately blinking green & red	Battery fault
		Blinking red	Low battery / Charging temperature is too high or low

Note: *When RF300 enters sleep mode, all LED indicators will turn off.*

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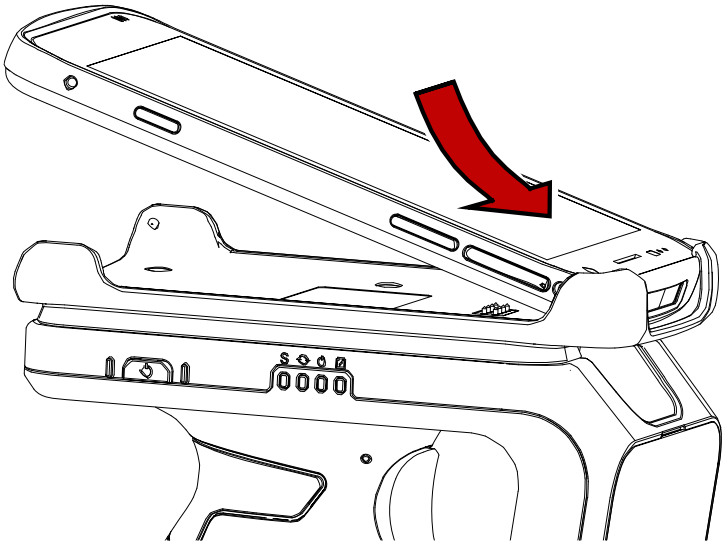
Getting Started

Install PM30

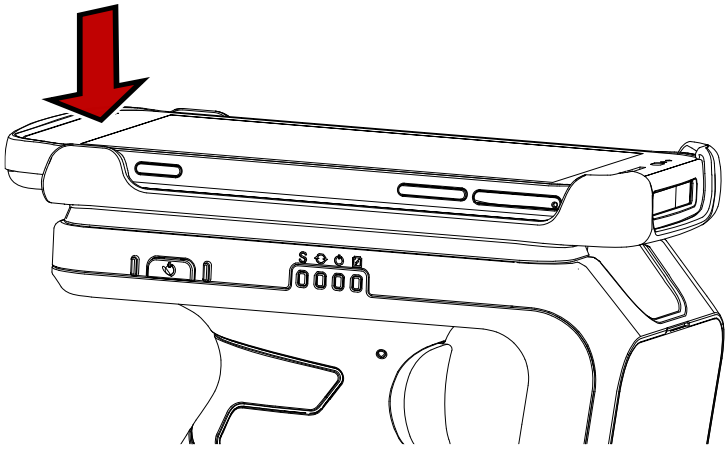
1. Insert the PM30 into the retention fixture of RF300 from the top side first.

Figure 8 Installing PM30_1



2. Push the bottom of PM30 down.

Figure 9 Installing PM30_2



3. To remove, hold the RF300 and pull up the bottom side of PM30.

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Connecting PM30

Install the RFID Control App

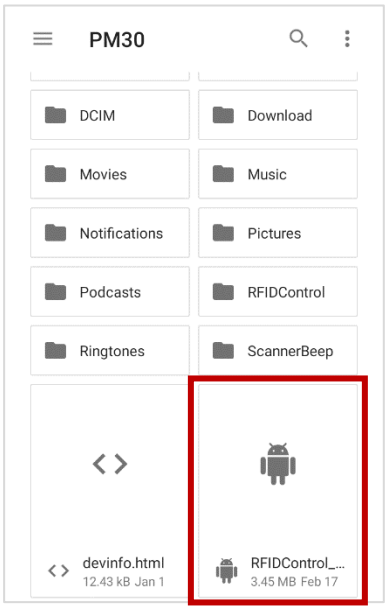
Connect your PM30 and RF300, set up the configuration, and update the firmware of the RF300 using RFID Control application. The app can be downloaded from Point Mobile Service Portal website.

This guide only describes a few basic features of RFID Control, so please find more detail information in RFID Control User Guide.

To install RFID Control,

1. Access to Service Portal and log in.
2. Go to the **Download** board and find a post titled as **RF300 Firmware & Materials**.
3. Download the RFID Control application.
4. Connect PM30 with PC and copy the apk file to internal storage of PM30.
5. Go to **FileExplorer** from PM30 App drawer, and install the app.

Figure 10 FileExplorer



6. To run the app, tap **RFID Control** from App drawer or **EmKit**

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Connecting PM30

Connect mode

RF300 supports two following connect modes.

Mode	Description
Wired communication (Default)	• Communicate through the pogo pin connectors on the PM30 and RF300. • Need to install PM30 on RF300.
Bluetooth communication	• Communicate through Bluetooth.

Change connect mode

To change connect mode from one to another,

- Press connect mode change button of RF300 until Connect-Mode LED changes.
- Change **Open option** in RFID Control.

Figure 11 Connect mode change button

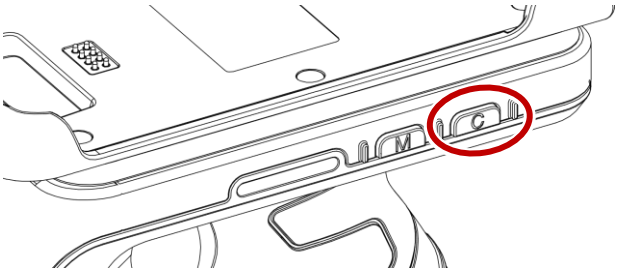
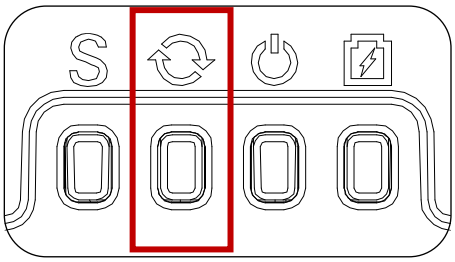
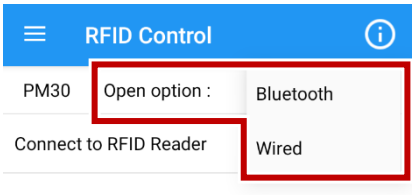


Figure 12 Connect-Mode LED



Connect-Mode LED	○ Turned off	Wired communication mode
	● Solid red	Bluetooth communication mode

Figure 13 RFID Control - Open options



Note: *Disconnect current connection before changing connect mode.*
Connect mode change button does not work when RF300 is already connected to any PM30.

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Connecting PM30

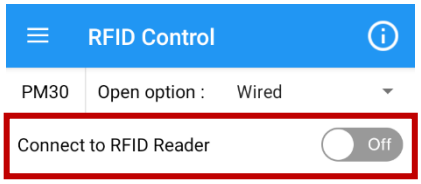
Wired Communication

Wired communication is a default connect mode for RF300 and PM30.

Because the devices communicate through pogo pin connectors, you must install PM30 on RF300 first for wired communication.

1. Install PM30 on RF300 referring to Install PM30.
2. Make sure the Connect-Mode LED is turned off. (= Wired mode)
3. Launch RFID Control and check if the **Open option** set as **Wired**.
4. Turn on **Connect to RFID Reader** toggle switch.

Figure 14 RFID Control - Wired mode



5. When the devices are connected properly,
   - State LED of RF300 lights green
   - An icon indicating the RF300's battery level is shown on the status bar

Figure 15 Wired connected screen

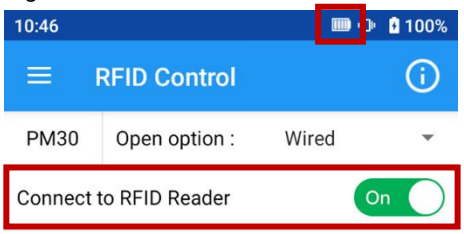
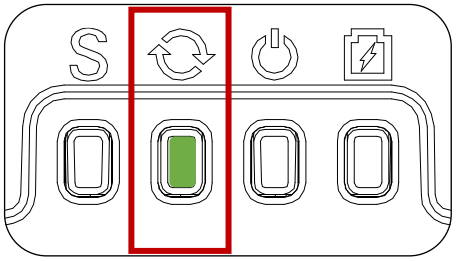


Figure 16 State LED (Wired or Bluetooth Connected)



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Connecting PM30

Disconnect

In one of the following cases, the wired communication will be disconnected.

- Detach PM30 from RF300
- Turn off the **Connect to RFID Reader** toggle switch (In RFID Control)
- Change **Open option** to **Bluetooth** (In RFID Control)
- PM30 enters suspend mode
- Turn off the RF300 or PM30

Auto reconnect

Auto-reconnect is performed when RF300 and PM30, connected through wired communication once, are re-installed, or PM30 wakes up from suspend mode while installed on RF300.

For auto-reconnect, all of the following states must be satisfied.

- RF300 and PM30 are turned on
- RF300 and PM30 connected through wired communication at least one time
- **Open option** of RFID Control and connect mode of RF300 is set as **Wired**
- Previous connection is disconnected by removing PM30 from RF300

  (If you disconnected it by toggle switch in RFID Control, Auto-reconnect does not perform.)

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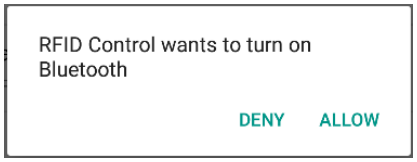
Connecting PM30

Bluetooth Communication

To connect RF300 and PM30 with Bluetooth, change the connect mode on the RF300 and RFID Control, first (Refer to Connect mode - Change connect mode).

When the **Open option** changes to Bluetooth while Bluetooth is turned off on PM30, the app tries to turn on the Bluetooth automatically. Tap **ALLOW**. If you denied, the app will be closed.

Figure 17 Bluetooth turn on dialog



Connect methods

There are two ways to establish the Bluetooth communication, Tap-to-Pair and Searching RFID reader. Choose more comfortable way.

Note: NFC Tap-to-Pair or Search RFID reader

- ***NFC Tap-to-Pair****: Easy automatic pairing and connection process with a single tap*
- ***Search RFID reader****: Normal pairing and connection process with manual steps*

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Connecting PM30

Tap-to-Pair

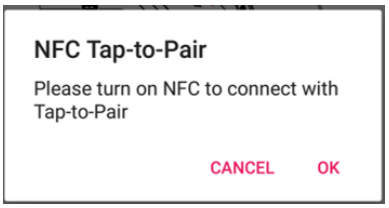
Tap-to-Pair method uses NFC feature, and connect RF300 and PM30 just by getting them close. An NFC tag is on RF300 UHF RFID antenna to support Tap-to-Pair.

1. Change connect mode to Bluetooth on RF300

   and **Open option** of RFID Control to **Bluetooth**.
2. Tap **NFC Tap-to-Pair** on RFID Control.

Note: *NFC is enabled by default. But if NFC is turned off, app will ask to turn on NFC. Tap* ***OK*** *and tap NFC toggle switch to enable NFC.*

Figure 18 NFC turn on dialog



Or before access the Tap-to-Pair screen, enable NFC by one of below ways.

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

Figure 20 NFC_Settings

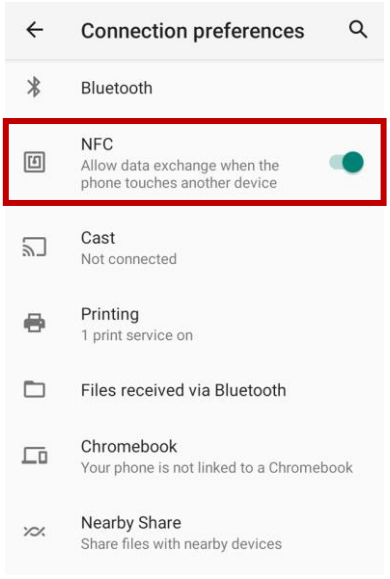
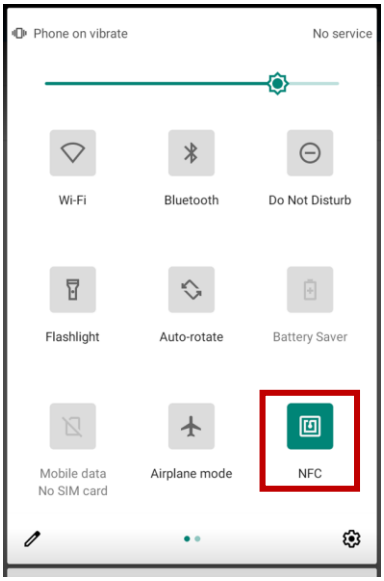


Figure 19 NFC_Quick setting panel



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Connecting PM30

3. Referring to NFC antenna area of PM30, bring the PM30 close to the NFC logo of RF300 as the picture on the screen. And then, allow the connection in the dialogs.

Figure 22 Tap-to-Pair

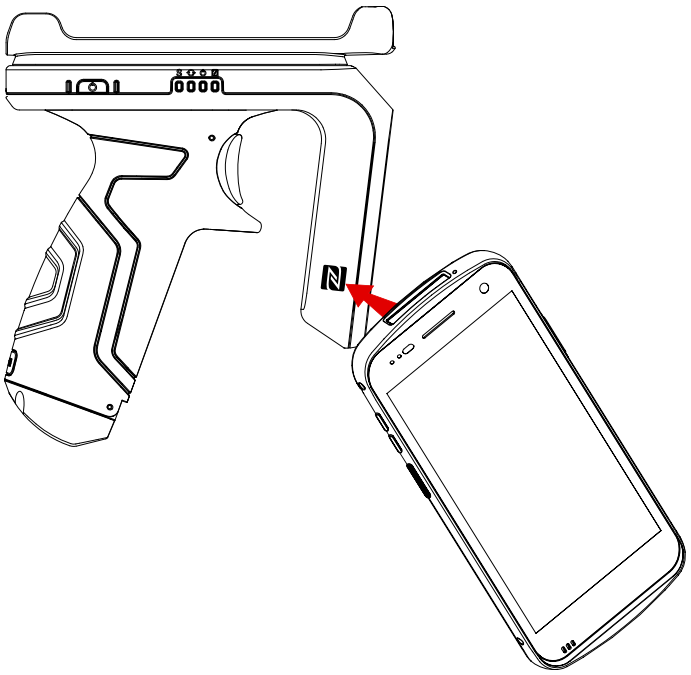
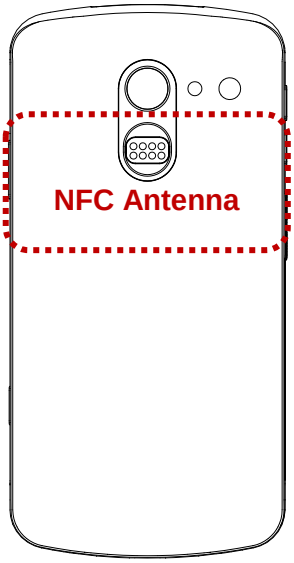


Figure 21 PM30 NFC antenna area



4. Check the device and reader are connected properly
   - Enabled **Connect to RFID Reader** toggle switch and connected RF300's name is displayed
   - An icon indicating the RF300's battery level is shown on the status bar
   - RF300's state LED lights green

Figure 23 Bluetooth connected screen

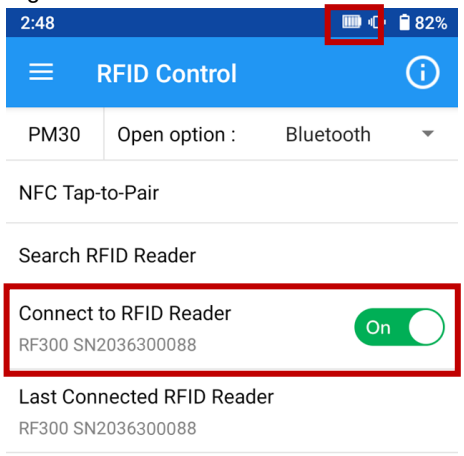
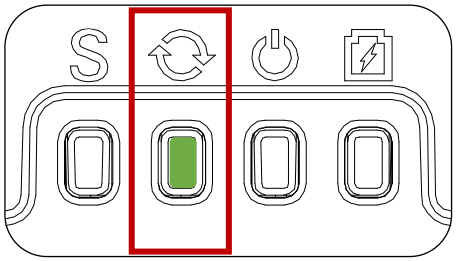


Figure 24 State LED (Wired or Bluetooth Connected)



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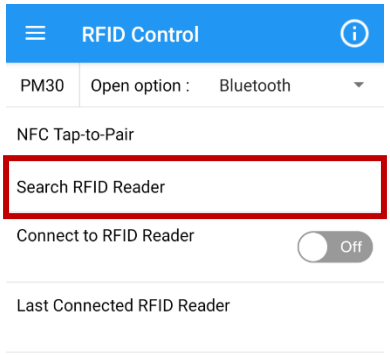
Connecting PM30

Search RFID Reader

Search nearby RF300 and choose one of the RF300.

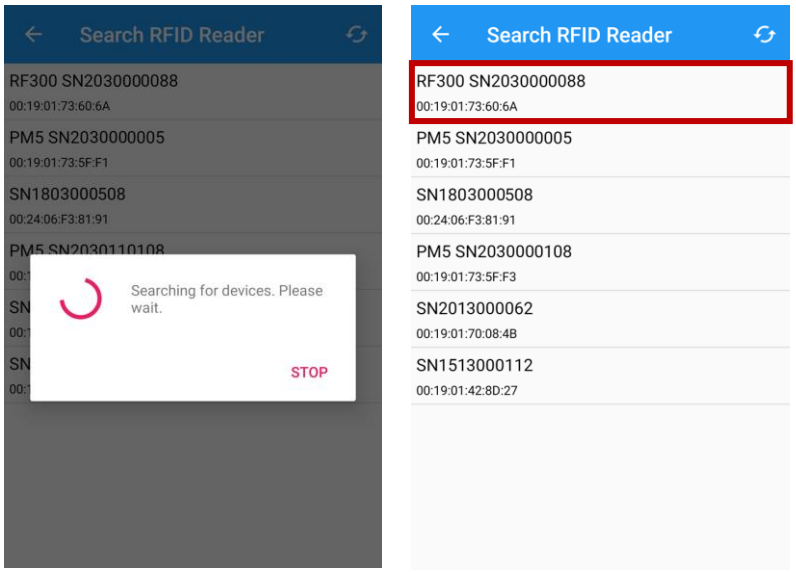
1. Change connect mode to Bluetooth on RF300 and **Open option** of RFID Control to **Bluetooth**.
2. Tap **Search RFID Reader** on RFID Control

Figure 25 Search RFID Reader



3. When desired RF300 name appears, stop searching by tapping **STOP** and select the name

Figure 26 Searching RFID reader



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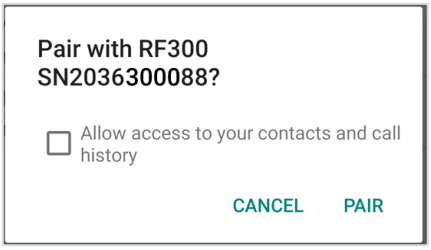
Connecting PM30

4. Allow the connection in the dialogs

Figure 27 Bluetooth pairing dialog



5. Check below items to confirm that RF300 is connected properly (Refer to Figure 23, Figure 24)
    - Enabled **Connect to RFID Reader** toggle switch and connected RF300's name is displayed
    - An icon indicating the RF300's battery level is shown on the status bar
    - RF300's state LED lights green

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Connecting PM30

Disconnect

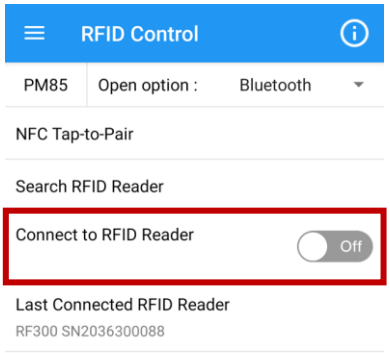
In one of the following cases, the Bluetooth communication will be disconnected.

- Change **Open option** to **Wired** (In RFID Control app)
- Disable Bluetooth from PM30
- Turn off the **Connect to RFID Reader** toggle switch (In RFID Control app)
- Turn off the RF300 or PM30

Reconnect

To reconnect to the last connected RFID reader, tap **Connect to RFID Reader** toggle switch and wait until the devices are connected.

Figure 28 Reconnect toggle switch



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Configuration Settings

Configuration Detail

RF300 configuration contains below settings. Find the details of each setting from RFID Control User Guide.

Settings			Range or Options	Default Value
Beep Volume			Mute Low High	High
Vibrator			On / Off	Off
Radio Power			-30 ~ 0 (0 ~ 30 dBm)	0 (30 dBm)
Tx Cycle	**Tx ON duration**		40 ~ 400	60
	Tx OFF duration		0 ~ 255	140
Tx Data Format			TAG_DATA PREFIX_TAG_DATA TAG_DATA_SUFFIX PREFIX_TAG_DATA_SUFFIX	TAG_DATA
Data Format			PC_EPC_CRC PC_EPC EPC_CRC EPC_ONLY	PC_EPC_CRC
Filter duplicate tags			On / Off	Off
Filter	**Tag Pattern**			(Blank)
	Offset		0~62	0 (digit)
	Select		Matching tags Non-matching tags	Matching tags
	Enable filter		Enable / Disable	Disable
Inventory Config	**Inventory Param**	**Session**	0 / 1 / 2 / 3	1
		Q	0 ~ 15	5
		Flag	A / B / A or B	A
	Operation Mode	**Mode**	Continuous Mode Single Mode	Continuous Mode
		Timeout	0 ~ 120	0 (Infinite)

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Configuration Settings

Settings		Range or Options	Default Value
Tag Focus		On / Off	On
Fast ID		On / Off	Off
Continuous Read		On / Off	On
Auto Read	**On / Off**	On / Off	Off
	Auto read interval	1 ~ 99	1 (sec)
Save Log		On / Off	Off
Sleep		30 seconds 1 minute 5 minutes 10 minutes 30 minutes 1 hour 2 hours	10 minutes
Reset RFID Settings			

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Configuration Settings

Apply Configuration

To adjust configuration, use RFID Control app or importing JSON file.

Apply via RFID Control

After connecting the devices, tap ☰ to open the side menu bar and select **Configuration**. And then, adjust each configuration manually using RFID Control interface.

Figure 29 Side menu bar - Configuration

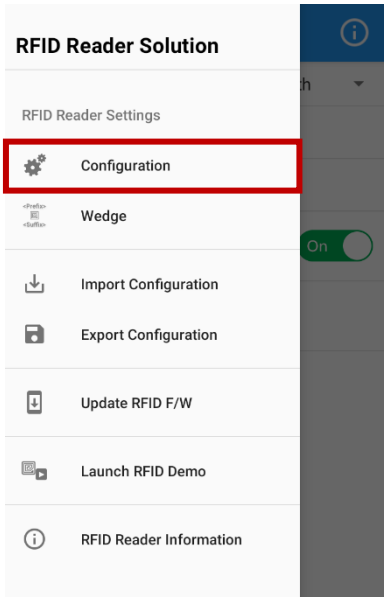
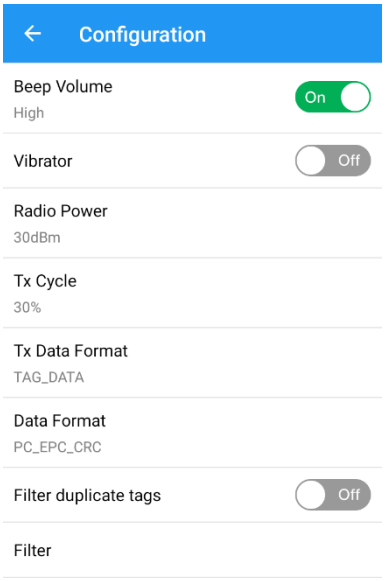


Figure 30 Configuration



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Configuration Settings

Apply via JSON file

You can also apply the configuration by importing the JSON file which contains configuration.

The JSON file for configuration update can be made by RFID Control Configuration Tool. And it must be named as **Configuration.json** and copied into **RFIDControl/RFIDJsons** folder of host device's internal storage.

***Note**: Must follow the file name and path. Otherwise, RFID Control cannot find the file.*

You can perform configuration update automatically or manually. Refer to below table to identify the differences and choose more suitable on your working environments.

Methods	Description
Auto Update	• Set auto update settings in JSON file • Update configuration every time the RF300 is connected while RFID Control is running
Manual Update	• Perform regardless the auto update is enabled or disabled • Perform update immediately

Auto Update

To set up the auto update, enable and save the auto update setting (**Auto update (JSON)**) in **Configuration.json** file which contains the configurations. (Find more detail in RFID Control Configuration Tool User Guide.)

And then, launch RFID Control without any connection with RF300 to save the auto update setting on the app.

When you set up Auto update,

- Auto Update will be performed every time RF300 is connected while RFID Control is running
- Auto Update setting value will be maintained until next reading JSON file
    - JSON file is read when RFID Control is launched without any connection with RF300

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Configuration Settings

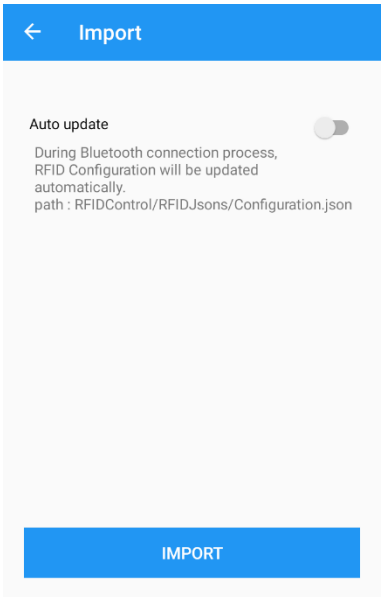
Manual Update

Manual update can be performed regardless the auto update is enabled or disabled. To apply the configuration immediately, perform update manually.

1. Make **Configuration.json** file and copy it to specified folder in internal storage of host device
2. Tap ☰ to open the side menu bar and select **Import Configuration**.
3. Tap **IMPORT** and wait until the process is done

   (There is no need to select JSON file because app will automatically find and use the **Configuration.json** file in the **RFIDControl/RFIDJsons** folder)

Figure 31 RFID Control - Import Configuration



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Wedge Settings

Wedge Detail

Wedge contains the below values. Find the details of each setting from RFID Control User Guide.

Settings	Options	Default Value
Result Type	Callback (User Message) Keyboard Event Clipboard (KEYCODE_PASTE) Clipboard (Ctrl+V) Intent Broadcast Custom Intent	Clipboard (KEYCODE_PASTE)
Terminator	None Space Tab LF Tab & LF	None
Prefix		(Blank)
Suffix		(Blank)

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Wedge Settings

Apply Wedge

To adjust wedge setting, use RFID Control app or importing JSON file.

Apply via RFID Control

After connecting the devices, you can access **Wedge**. Tap ☰ to open the side menu bar and select **Wedge**. And then, adjust desired configuration.

Figure 32 Side menu bar - Wedge

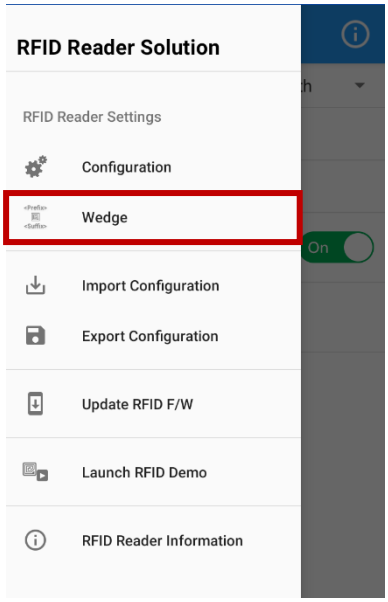
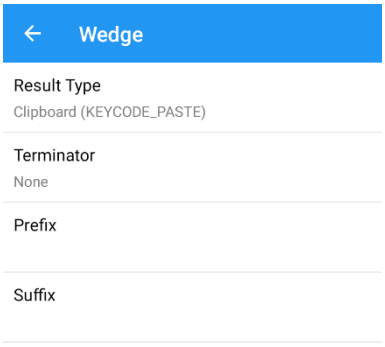


Figure 33 RFID Control - Wedge



Apply via JSON file

See Apply via JSON file in Configuration Settings. If the JSON file contains wedge setting values, Wedge settings are applied at the same time when you apply the configuration settings via the JSON file.

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Firmware Update

Point Mobile provides up-to-date RF300 firmware in Service Portal. The firmware files are provided by RFU file format, and it contains Bluetooth firmware and MCU firmware both.

To perform firmware update, download the RFU file from Service Portal and copy it into the specified folder of host device's internal storage.

Note: *Must copy the RFU file to* ***RFIDControl/RFIDRFUs*** *folder of host device's internal storage. Otherwise, the app cannot find the file.*

You can perform update automatically or manually. Refer to below table to identify the differences and choose more suitable on your working environments.

Methods	Description
Auto Update	• Set auto update settings and firmware filename in JSON file • Update Firmware every time the RF300 is connected while RFID Control is running
Manual Update	• Select firmware file manually in RFID Control • Perform update immediately

Auto Update

To set up the auto update, enable and save the auto update setting (**Auto update (RFU)** & **RFU filename**) in **Configuration.json** file (Find how to set auto update in JSON file in RFID Control Configuration Tool User Guide) and copy the JSON file into **RFIDControl/RFIDJsons** folder of host device.

And then, launch RFID Control without any connection with RF300 to save the auto update setting on the app.

When you set up Auto Update,

- Auto Update will be performed…
  - Every time the RF300 is connected while RFID Control is running
    & RFU file version is different from current RF300 firmware version
- Auto Update setting value will be maintained until next reading JSON file
  - JSON file is read when RFID Control is launched without any connection with RF300

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Firmware Update

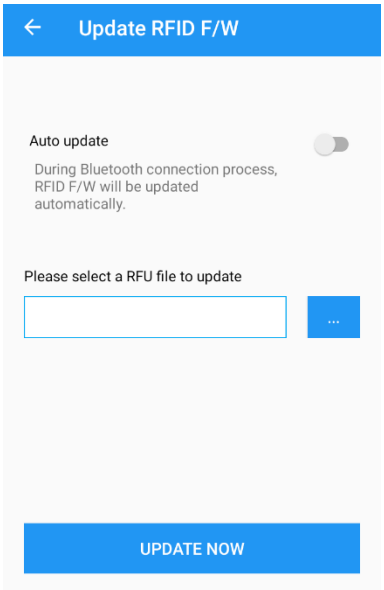
Manual Update

Manual update can be performed regardless the auto update is enabled or disabled. To update the firmware of RF300 manually,

1. Execute RFID Control and connect RF300 to host device
2. Tap ☰ and select **Update RFID F/W**
3. Tap ... to browse the RFU file you prepared

   (The file must be in **RFIDControl/RFIDRFUs** folder.)

Figure 34 RFID Control - Update RFID F/W



4. Select the RFU file and Tap **UPDATE NOW**
5. Wait until the update process is done

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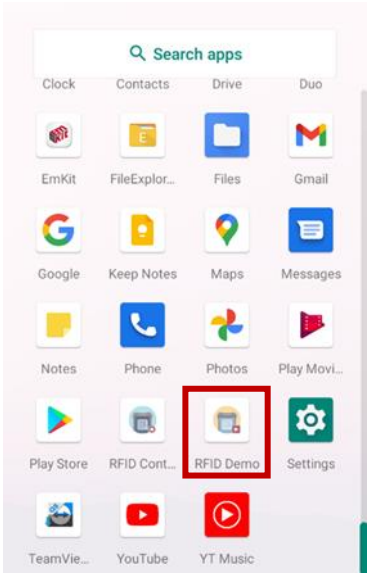
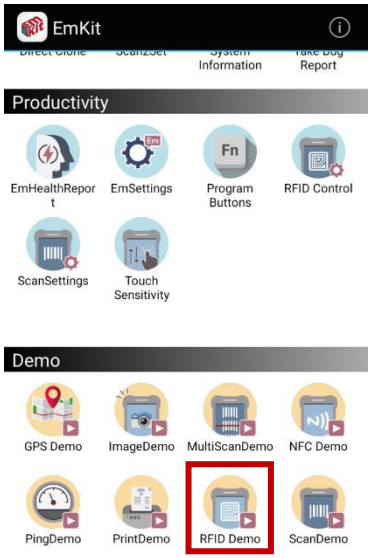
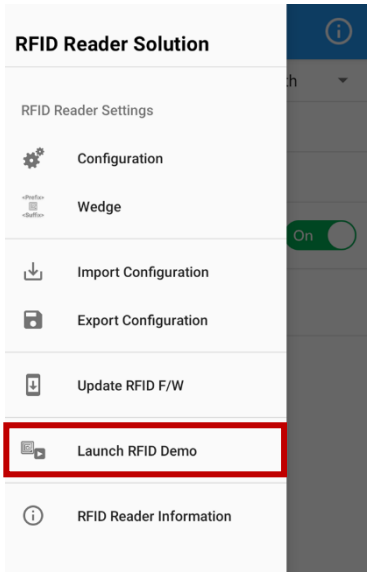
Read RFID Tag

RFID Demo

You can demonstrate the function of reading an RFID tag with RFID Demo. RFID Demo will be installed together with RFID Control.

There are two ways to launch RFID Demo,

- Tap **RFID Demo** from App drawer or **EmKit**
- Open the side menu bar on the RFID Control and tap **Launch RFID Demo**

App drawer	EmKit	RFID Control
		

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Read RFID Tag

Read the RFID Tag

Before read RFID tag, make sure that the Trigger-Mode LED lights off. Turned off Trigger-Mode LED means that RF300 is in UHF RFID mode.
If the LED lights on red, press and hold the Trigger-mode change button until the LED turns off because red LED means RF300 is in barcode scan mode.

Figure 35 Trigger mode change button

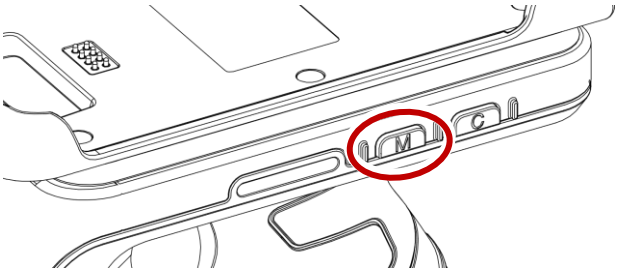
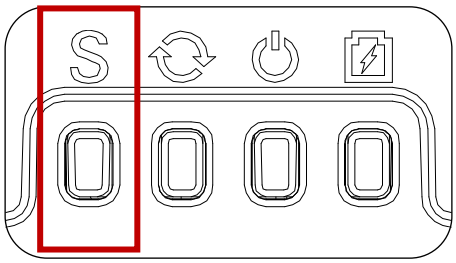


Figure 36 Trigger-Mode LED (UHF RFID mode)



Read RFID tags after connecting the RF300 to your PM30. To read RFID tags, aim the tag and then press the trigger button of RF300 or tap the **Read RFID Tag** button on the screen.

Figure 37 Reading RFID tag

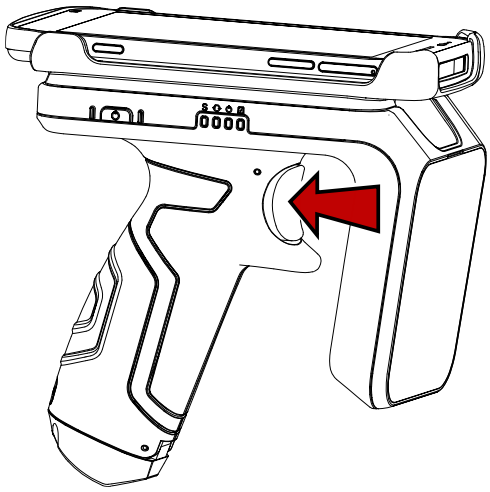


Figure 38 RFID Demo - Read tag

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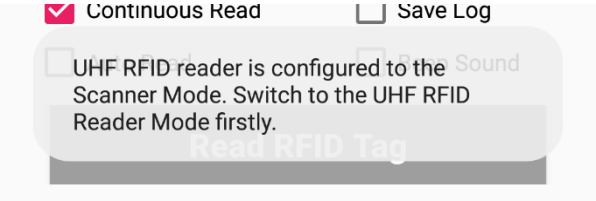
Read RFID Tag

Note: *Make sure the RF300 is in UHF RFID mode. If you try to read RFID tags using RFID Demo app while RF300 is in* ***barcode scan mode****, it does not work and a toast message pops up on the screen.*

Figure 39 RFID Demo - Barcode scan mode message



For demonstrating barcode scan function, use Scan Demo application.

Tap to sort the delivered tag data in order and tap to clear the tag data.

Figure 40 RFID Demo - Read tags

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Scan a Barcode

If you want to scan a barcode instead of RFID tag, change the trigger mode of RF300. Trigger button will activate the barcode scan action.

1. Press and hold the trigger mode change button until the Trigger-Mode LED turn on red.

Figure 41 Trigger mode change button

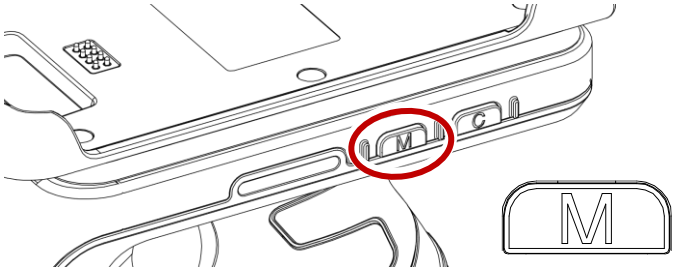
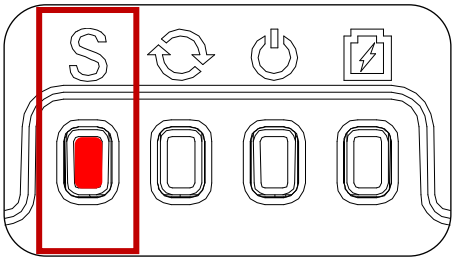


Figure 42 Trigger-Mode LED (Barcode scan mode)



2. Execute **Scan Demo** or scanner application, and then scan a barcode by pressing the trigger button of RF300.
3. Check the barcode information displayed on the app

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Safety Information

Battery Safety Information

Follow battery safety guidelines in this manual for safe usage and disposal of Li-ion batteries. Improper battery usage may result in an explosion, fire, or other critical hazards.

Battery Usage & Disposal Guidelines

1. Use only Point Mobile approved batteries and charging accessories. Other batteries and charger may damage the device.
2. Do not disassemble or modify the battery. Do not bend, shred, deform the battery.
3. Do not expose the battery to excessive heat or cold. Do not place the battery into a microwave oven or dryer.
4. Do not short-circuit the battery or allow a foreign object to battery contacts.
5. Do not burn, expose to water, or other liquids the battery.
6. If battery leakage is observed, avoid any contact with the skin or eyes. If contact has been made, wash the affected area with water for 15 minutes, and seek medical attention.
7. Follow the local regulations for the disposal of used batteries.
8. Do not store or charge the battery in direct sunlight or in areas prone to get hot such as in a parked vehicle, near a heat duct, or close to other heat sources.

Battery Charging Guidelines

1. Do not charge the battery in or near areas with materials that could obstruct charging or cause a short-circuit.
2. Do not charge the battery in the excessive hot or cold area.
3. Separate the charger from the battery as soon as possible when the battery is fully charged.
4. Charge it at least once every six months to prevent full discharge and keep the performance, when you are not using the battery for a long period.

Notice: *The battery is consumable goods. Point Mobile provides warranty for battery in 6 months after purchase.*
If you suspect the battery swelling, change the battery and contact Point Mobile to use safely.

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