




ATID Co.,Ltd

ATID Reader Demo Guide for iOS

ATID Reader Products

SW Team

2023-02-10


		ATID Reader Demo Guide for iOS					
ATID Reader Products					Company	ATID Co.,Ltd	
Document Name		Author	SW Team	Date	2023-02-10	Version	v0.5

Revision record

Version	Date of Revision	Reason for Revision ¹	Revision Detail ²	Author
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¹ Reason for Revision : Entry of Addition/Modification/Deletion about Revision or Enactment of the Previous Document Contents

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1. Outline

This Document is intended to give instructions of How to Use ATID Reader Demo.

ATID Reader Demo is designed to give demonstration of External Accessory's function of ATID and recommended to be operated on iOS O/S 10.2.1 or higher version.

Currently, ATID Reader Demo only supports AT188N/AT188NP/AT388/ATS100/ATS200 devices.


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2. Device Management

The first screen when ATID Reader Demo is launched is Device Setting. ATID Reader Demo is designed to save previously connected devices. On the Device Setting Menu of ATID Reader Demo, you can add or delete devices and manage connections with other devices. The next image is when ATID Reader Demo App is launched for the first time and description of each part.

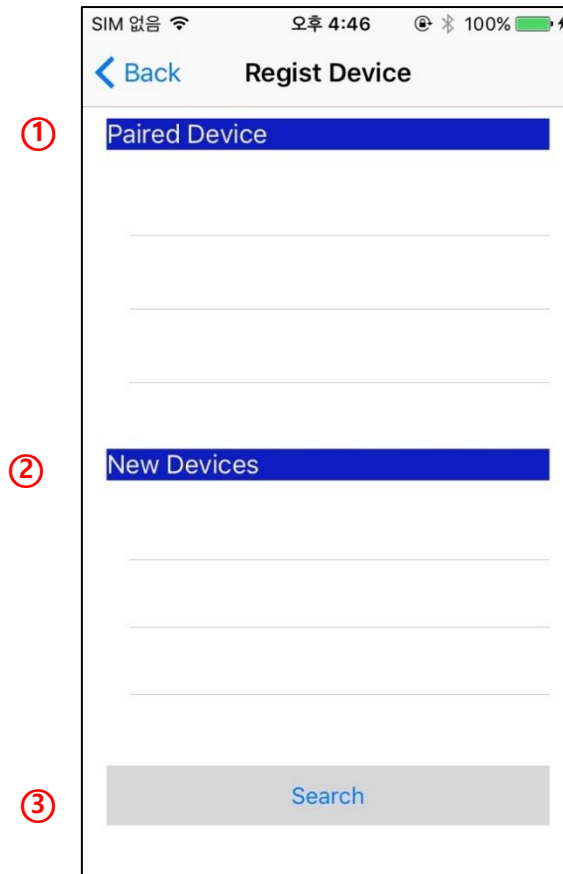


- ① **App Version:** It indicates the Version of ATID Reader Demo App.
- ② **Device List:** It lists devices being managed.
- ③ **New Device:** To add new devices, touch "New Device" button and it takes you to the screen that enables you to add new devices.


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2.1. Scan a New Device

On the first screen of Device Setting, touch the "New Device" Button. The illustration below will appear. These are the instructions of each part.

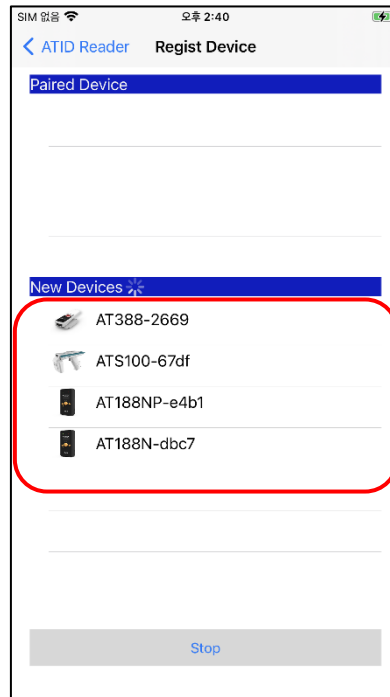


- ① **Paired Devices:** It lists previously searched devices.
- ② **New Devices:** It lists newly searched devices.
- ③ **Search/Stop:** Touch "Search/Stop" to Start or Stop Searching.

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2.1.1. How to Connect a new device

Touch "New Device" Button on the Device Setting Screen and Select a Desired Device below the New Devices List to Pair. Once it pairs, it proceeds to the "Inventory" screen



To pair with the latest paired device again, touch the screen that shows connection status on the first screen as shown in the illustration below.



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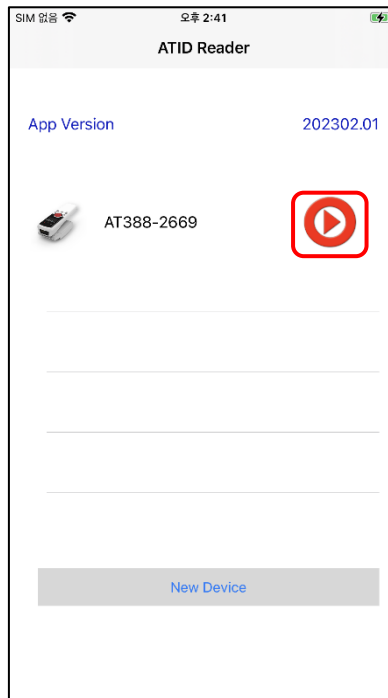
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Date

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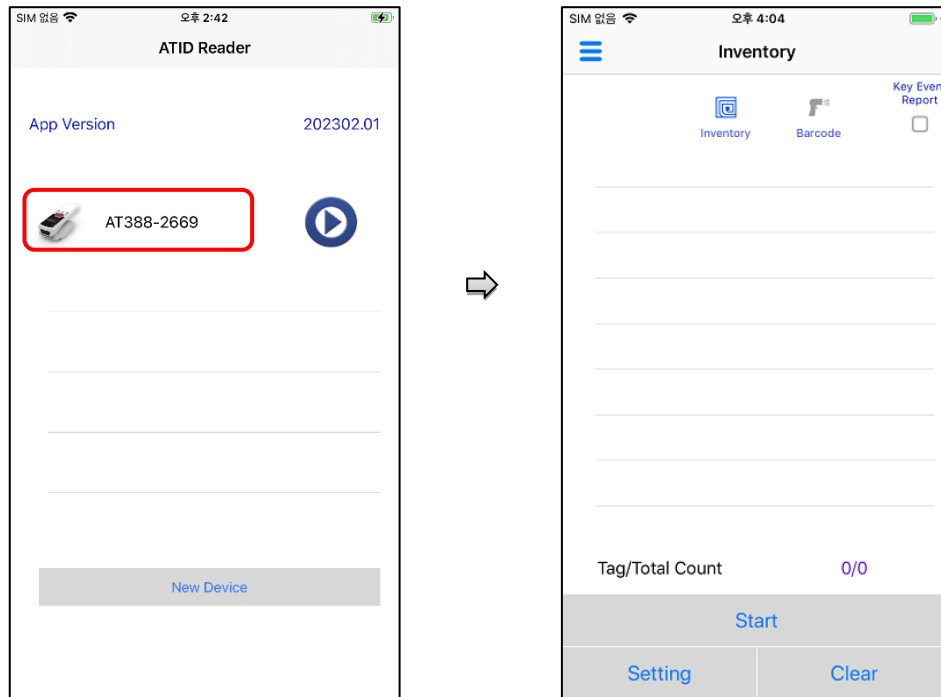
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2.1.2. How to go to the demo screen

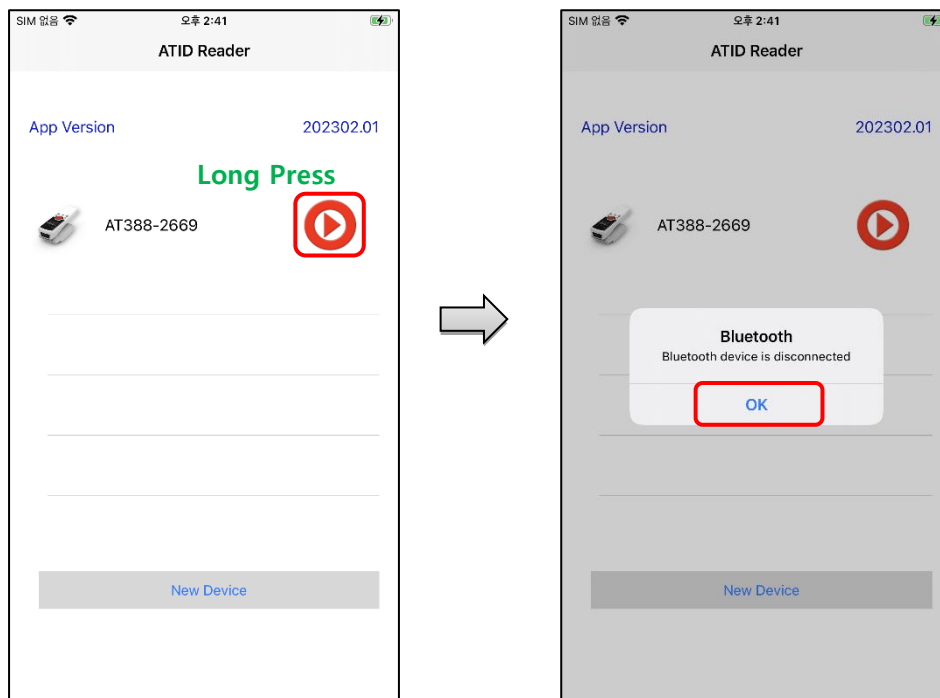
To go to the Demo Screen from the first screen, touch the paired device. Touching the device that is already paired will take you to the Inventory Screen.




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2.2. Disconnect Device

After finishing use of paired devices, touch the button showing the connection status on the right side of the paired device as shown in the illustration below.



If the distance between the Demo App and the Smart Phone that is running becomes too far, the connection can be lost due to incapability of connection. Also, the connection will be lost if you turn off the device. In connected status, the connection icon is blue and the disconnection icon is red. If it is a red image (disconnected status), long press the image to delete the selected connection from the list.


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3. ATID Reader Device Demo

This chapter explains about ATID Reader Demo.

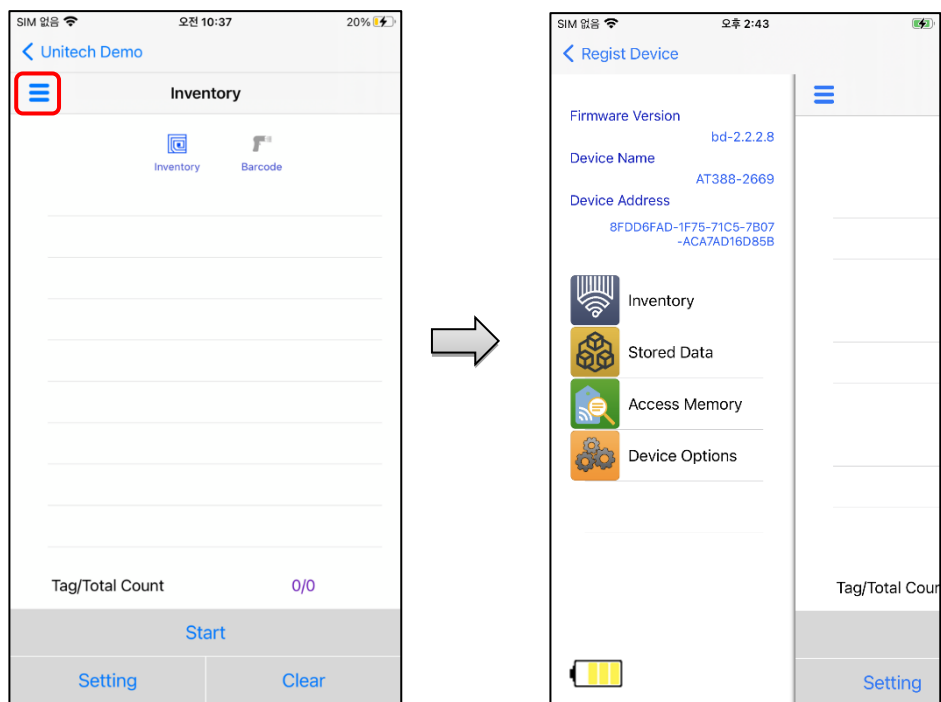
When ATID reader is not operated by the connection with host programs (Standalone Mode), RFID tags and Barcode that the device read are saved. When it is connected with the host program, it will be operated by mutual connection with the host program and in accordance with the settings of the Host Program, it processes RFID tags and Barcode data.

When it's connected with ATID Reader, ATID Reader Demo consists of five Demo Screens. When it moves to the Demo Screen after the first connection, basically it takes you to the Inventory & the Barcode Demo Screen. It consists of "Stored Date Demo" Screen that shows stored date in ATID Reader, "Access Memory Demo" Screen that sets "Read Memory", "Write Memory", "Lock Memory" in UHF RFID functions and "Device Options Demo" that sets Device Options.


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3.1. Demo Menu

As shown in the illustration below, to open the Demo Menu, touch the Menu Button on the top-left corner of the screen or drag the screen from the left to the right.



On the Demo Menu, it shows Firmware Version of Connected Devices, Devices' Name and Address. For the other menu options, there are "Inventory", "Stored Data", "Access Memory", and "Device Option". Select an option to move to the selected Demo Screen.

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3.2. Inventory

In the Inventory Demo, you can see RFID (UHF) and Barcode Reader Memo by running them.


First of all, it shows Inventory Demo screen composition.

3.2.1. Screen Composition

Inventory Demo Screen Composition is shown in the following illustration.

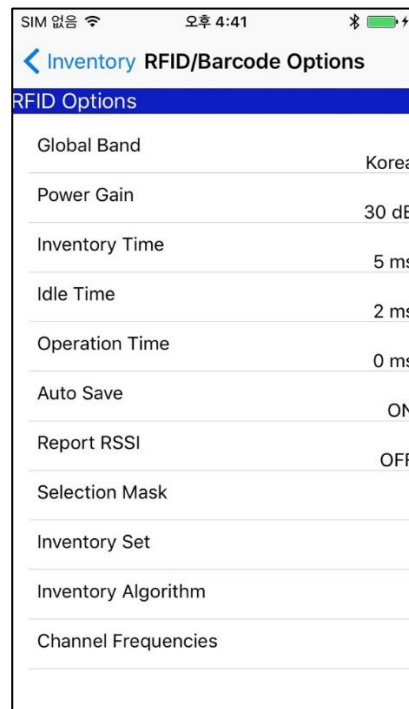


- ① **Operation Mode:** You can mark and set if the current device is on RFID Reading Mode or Barcode Reading Mode. If the device doesn't support Barcode System, it will not be operated.
- ② **Data List:** It marks RFID tag data or Barcode data that are read by the device.
- ③ **Tag/Total Count:** It prints the number of Data/Data that the device read on Data List.
- ④ **Start:** It runs "Inventory" on RFID Reading Mode and runs "Barcode Decoding" on Barcode Reading Mode. During the operation, touch "Stop" button to change.
- ⑤ **Settings:** You can change the required setting of RFID Inventory and Barcode Reading.
- ⑥ **Clear:** It deletes all the data on Data List and initializes values of each count.

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3.2.2. How to change RFID options

You can set the required information to perform RFID Inventory via Inventory Option. To go to the Inventory Option, touch the setting button below “Access Memory Demo” and Inventory Screen.



3.2.2.1. Global Band

It shows the setting status of the device's nation.

3.2.2.2. Power Gain


It sets the Antenna Output Power when the device performs actions related with RFID Tag.

3.2.2.3. Inventory Time

It sets the time of Acting Module when the device performs Inventory.

3.2.2.4. Idle Time

It sets the Idle Time when the device performs Inventory.

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3.2.2.5. Operation Time

It appoints the time to perform works related with RFID Tag. It performs continuously until it receives "Stop" command.

3.2.2.6. Auto Save

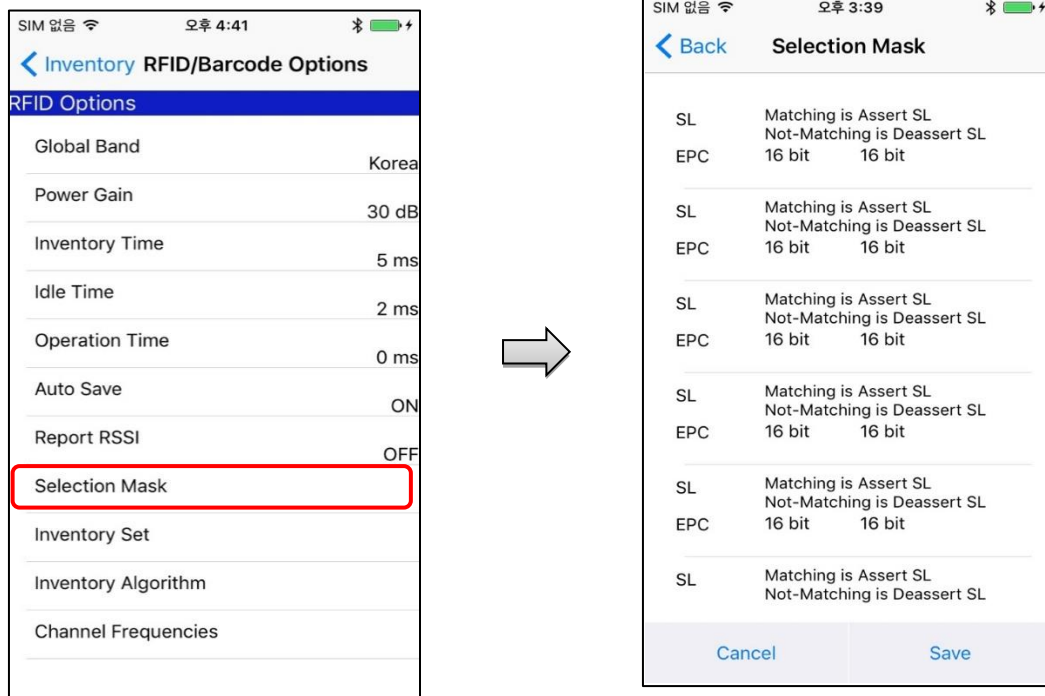
With Auto Save Mode Option, you can select whether you desire to save Tag Data and Barcode in Internal Storage. (Auto Save Mode is only applicable when the device is connected with Demo)


3.2.2.7. Report RSSI

When it performs actions related with RFID Tag, besides RFID Tag value, you can set to read RSSI value and Phase value. (At the moment when the device recognizes Tags, the RSSI value indicates Signal Strength and the Phase value indicates Phase Frequency.

3.2.2.8. Selection Mask

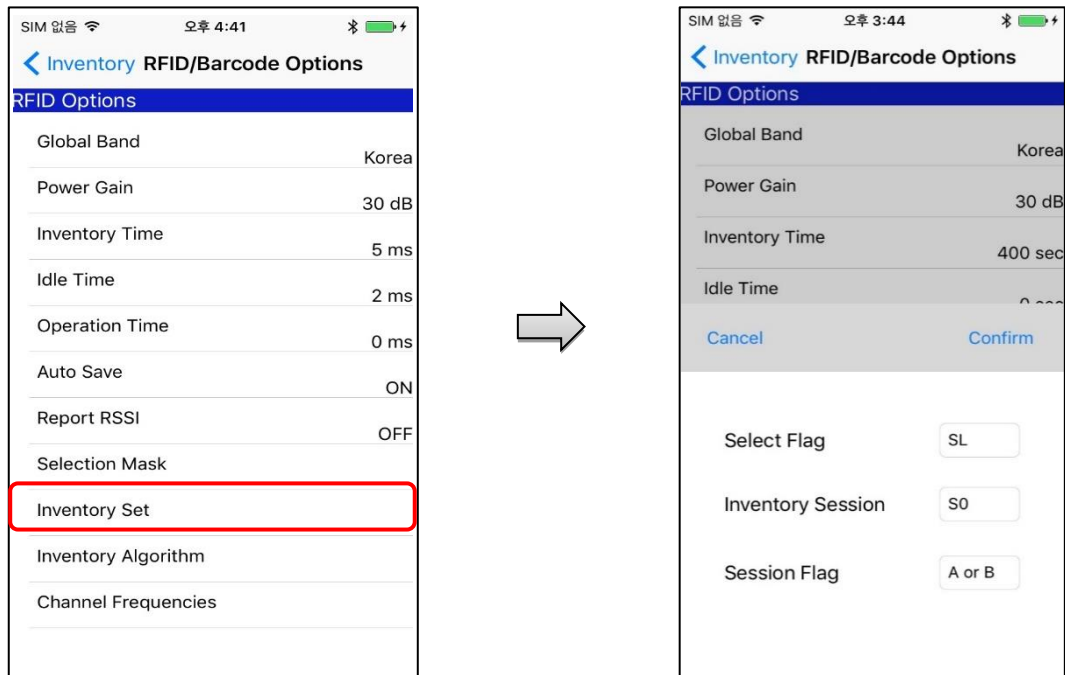
With Selection Mask Setting, you can assign the actions to certain Tags.



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3.2.2.9. Inventory Set


It sets action conditions of Inventory.



- ① **Select Flag:** Among Inventory options, it specifies the status of Select Flag to compare.

Select Flag	Description	Note
SL	It indicates that Select Flag will perform inventory only on the tags in Assert Status.	
~SL	It indicates that Select Flag will perform inventory only on the tags in Deassert Status.	
All	It indicates that regardless of the status of Select Flag, it will perform inventory on tags in all status.	

- ② **Session Target:** Among Inventory conditions, it specifies Session Flag to compare

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Session Flag status.


Session Target	Description	Note
S0	It indicates that the status of Session Flag to check is S0	
S1	It indicates that the status of Session Flag to check is S1	
S2	It indicates that the status of Session Flag to check is S2	
S3	It indicates that the status of Session Flag to check is S3	

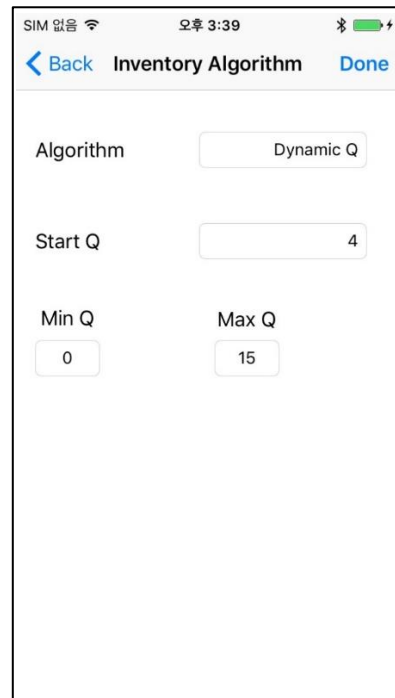
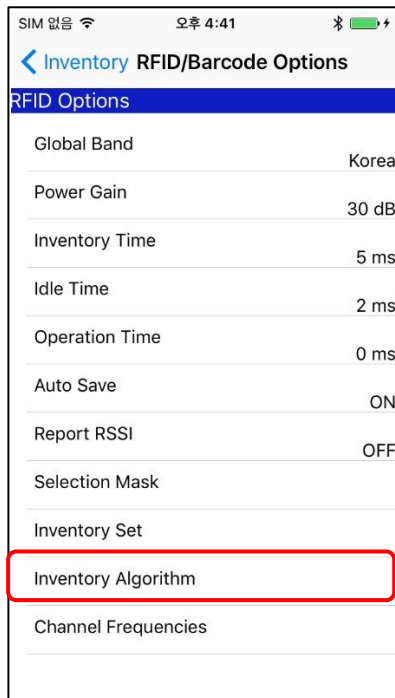
- ③ **Session Flag:** Among Inventory conditions, it specifies the status of Session Flag.

Session Flag	Description	Note
A only	It indicates that it will perform inventory only on the Tags that the status of Session Flag is in A.	
B only	It indicates that it will perform inventory only on the Tags that the status of Session Flag is in B.	
A or B	It indicates that it will perform inventory on the Tags regardless of the status of Session Flag.	

3.2.2.10. Inventory Algorithm

Inventory Algorithm is able to set the Algorithm that performs inventory on tags in RFID UHF.

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Inventory Algorithm sets the Algorithm that current RFID UHF Module uses, Start Q-value, Minimum Q-value, and Maximum Q-value.

Algorithm can select between Algorithms using fixed Q-value and variable Q-value.

You can set Start Q-value from 0 to 15.

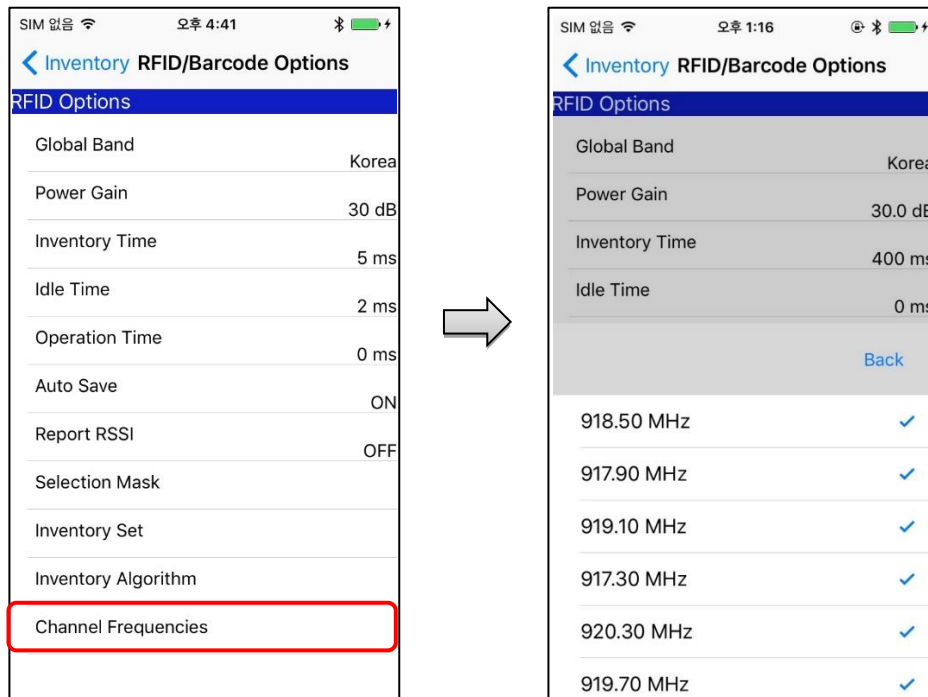
You can set Min Q-value from 1 to a value less than Max Q-value

You can set Max Q-value from a value greater than Min Q-value to 15.


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3.2.2.11. Channel Frequencies

Channel Frequencies show Channels in use in accordance with the nation setting of RFID UHF Module.

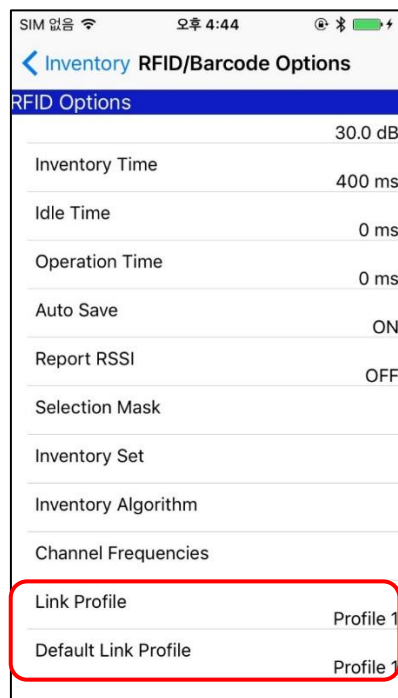



The check status in the check box on the right side specifies whether Channel Frequencies are enabled. It is available to modify whether to enable or disable a specific Frequency only when Global Band is set as Japan. (In case of other regions, it is only available to view the current applicable status.)

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3.2.2.12. Link Profile/Default Link Profile (AT388/ATS100/ATS200 Only)

Link Profile changes the preset Link Profile values in the device. When the device is turned off, the Link Profile set by this Menu returns to Default Link Profile Set values. The values set by Link Profile Menu are applicable only when the device is on. The devices that can change Link Profile and Default Link Profile are AT388/ATS100/ATS200 and in the case of applicable devices, Link Profile and Default Link Profile will appear at the bottom of RFID Options as shown in the illustration below.



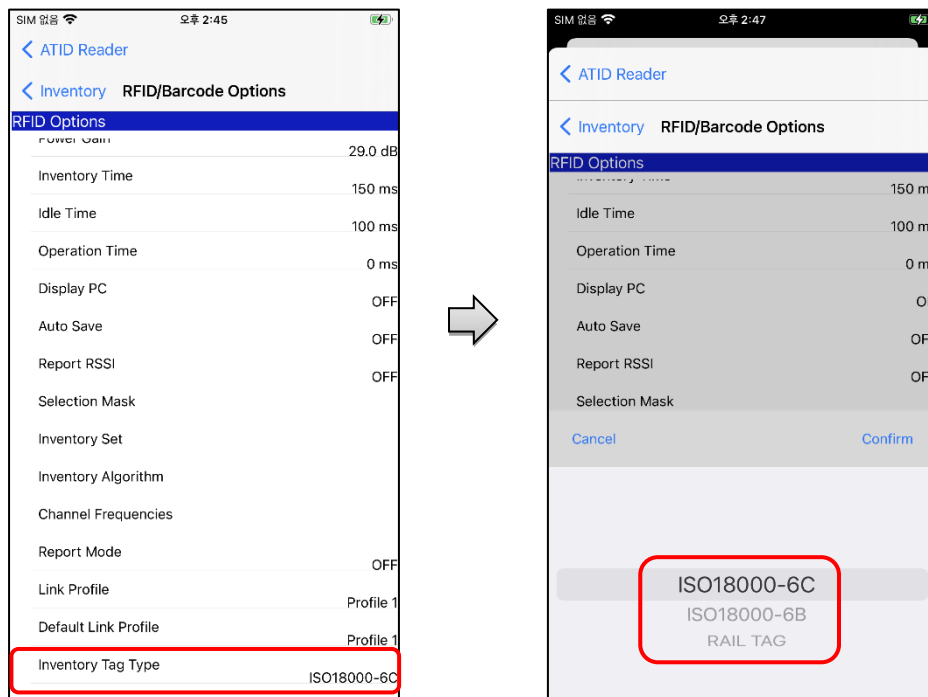
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3.2.2.13. Inventory Tag Type

This option provides to set which type of tag to be read/inventory. There are three options available namely ISO18000-6C, ISO1800-6B and Rail Tag.

By default, ISO18000-6C is set.

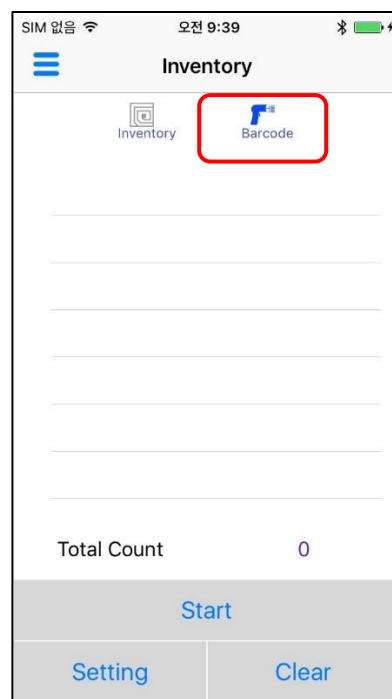
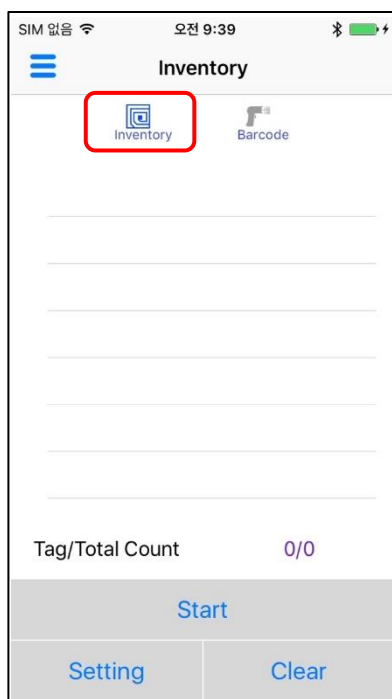
Note: after power-off and power-on, tag type option retains its last state. i.e., it will not reset to default upon device power-off.




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3.2.3. How to RFID inventories and reading barcode

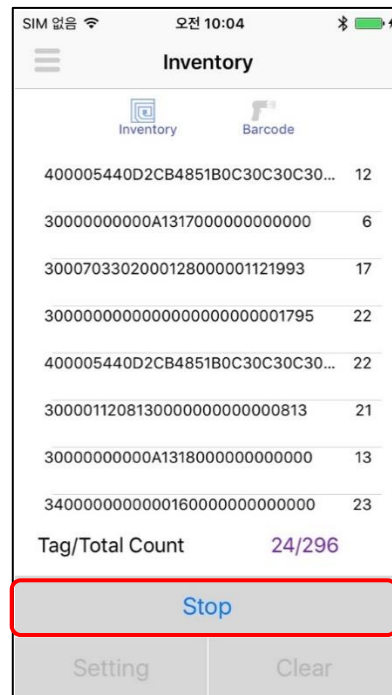
On the Inventory Screen, the Operation Mode selects a desired action of the current device between RFID UHF Inventory and Barcode Reading. The Operation Mode can be manipulated not only on the Inventory Screen by touching but also on the device. If it is manipulated on the device, it will be reflected on the Inventory Screen and if it's manipulated on the Inventory Screen, it will be reflected on the device. (Only AT188N/AT188NP, ATS100/ATS200 are applicable when selecting on the screen to reflect on the device)



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If you choose the Operation Mode, you can operate works by touching the button.

If Operation Mode is RFID, it performs Inventory on RFID tags.




When the Inventory starts, "Start" button changes to "Stop" button and you can stop the Inventory by touching "Stop" button.

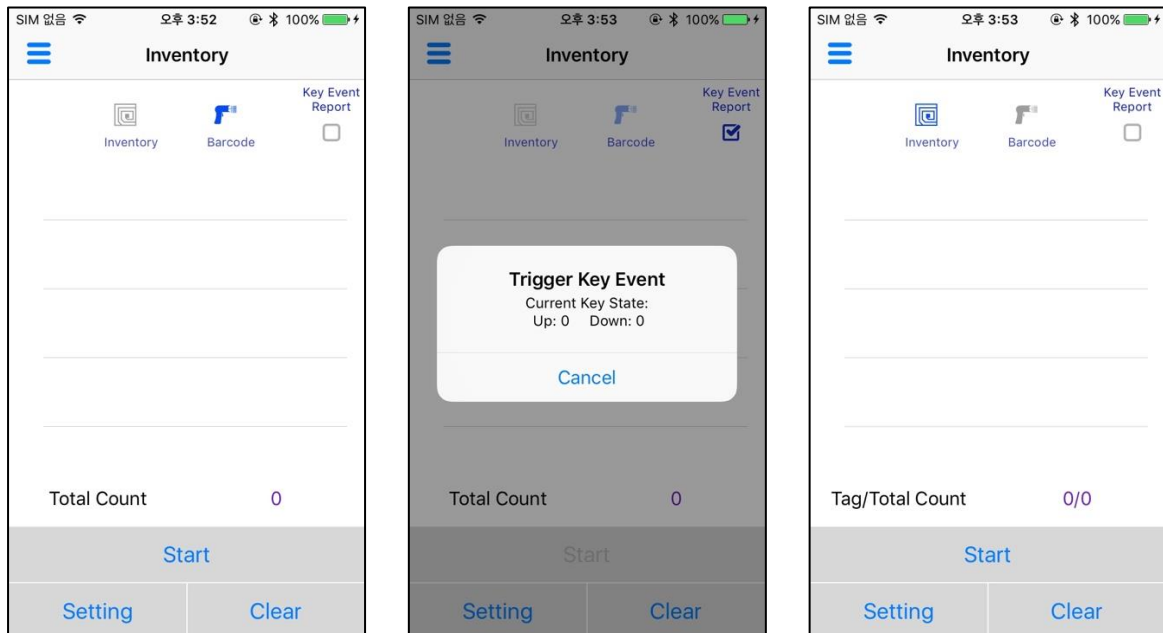
The Inventory basically read tags continuously and displays on the screen. The way to display on the screen is that the tags with the same values are marked once on the list and it displays the number of tags that was read along with the right side of the tag list.


Then Tag Count outputs the number of tags on the list and Total Count outputs the number of tags that are read from the first.

If the number of tags that are read is many, you can drag and scroll down.

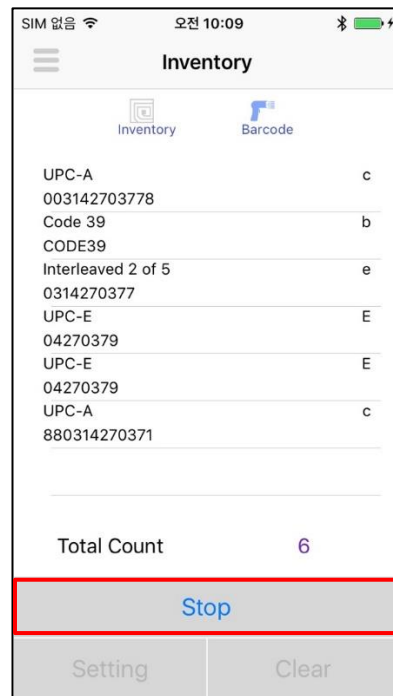
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If there is a Trigger mode, "Key Event Report" is added on the Operation Mode that displays Trigger Key Input separately as shown in the illustration below. If you touch the "Mode" button of the device or the menu on the screen, a pop-up window will appear displaying the entered Keys as described below. If you operate "Trigger Key" while the Pop up window is on the screen, it shows the action by counting it. Touch the "Cancel" button of the Pop-up window or the "Mode" button of the device to turn off the Trigger Mode. The illustration on the right is the status when the Trigger Mode is changed to the Inventory Mode. Currently, Trigger Mode is only available on ATS100/ATS200.




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When the Operation Mode is Barcode, Touch “Start” button to start Barcode Reading



When Barcode Reading starts, “Start” button changes to “Stop” button like Inventory and touch “Stop” button to stop Barcode Reading.

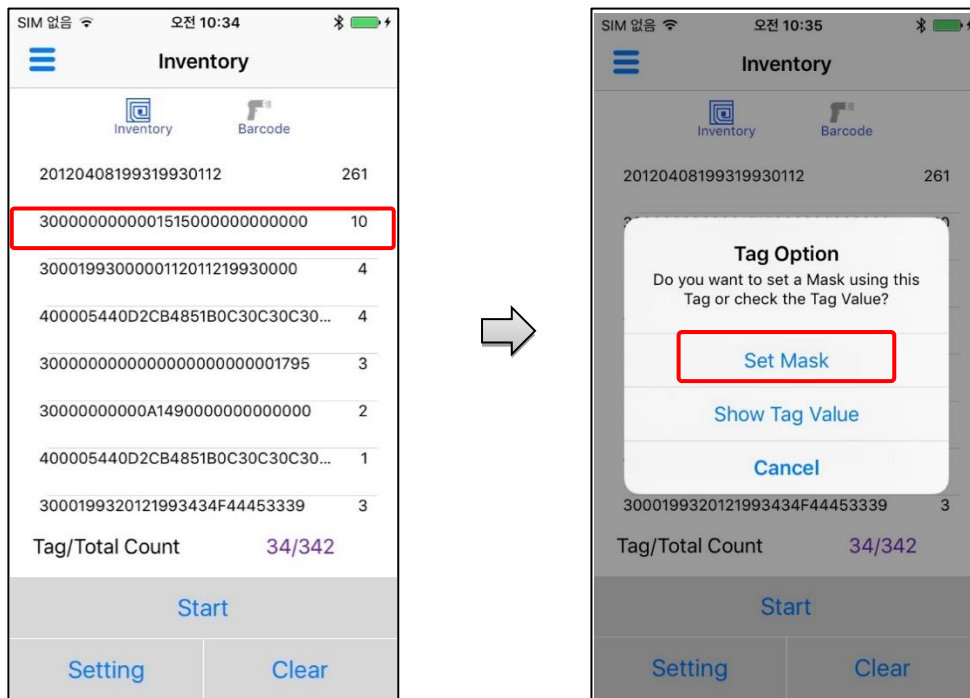
In case of Barcode Reading, when Barcode is read, Barcode Reading stops automatically.


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3.2.4. How to read barcode and write them to tags

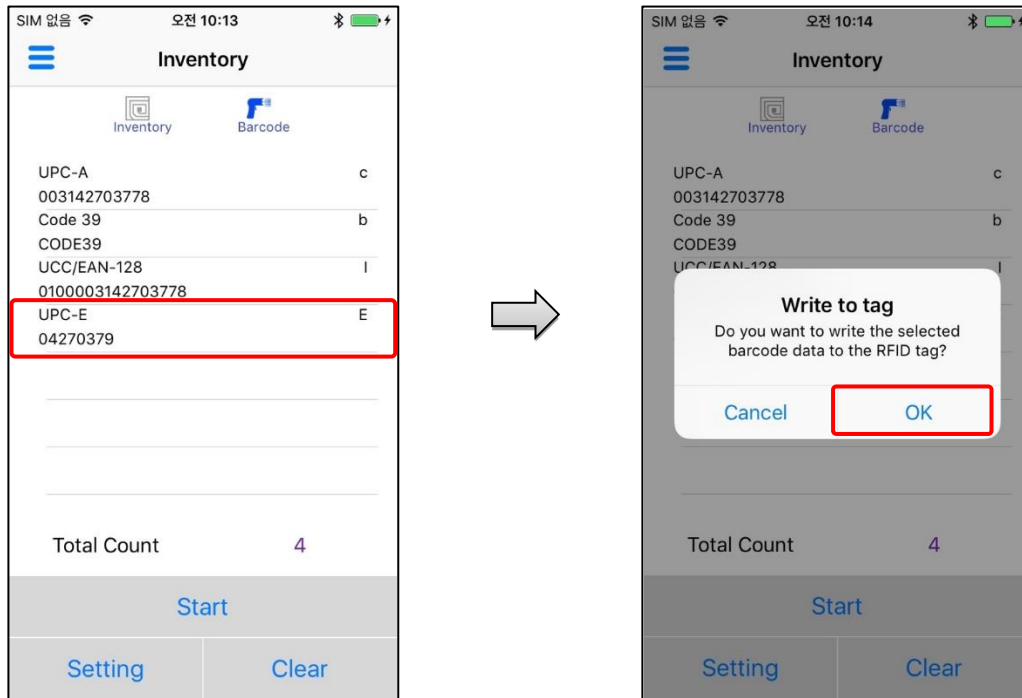
To search tags to save barcode on the Inventory screen, perform Inventory on RFID tags by touching "Start" button on the RFID mode.

Select "Selection Mask" by touching the RFID tag that is to save barcode data.




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Set the operation mode as Barcode and read barcode by touching "Start" button.



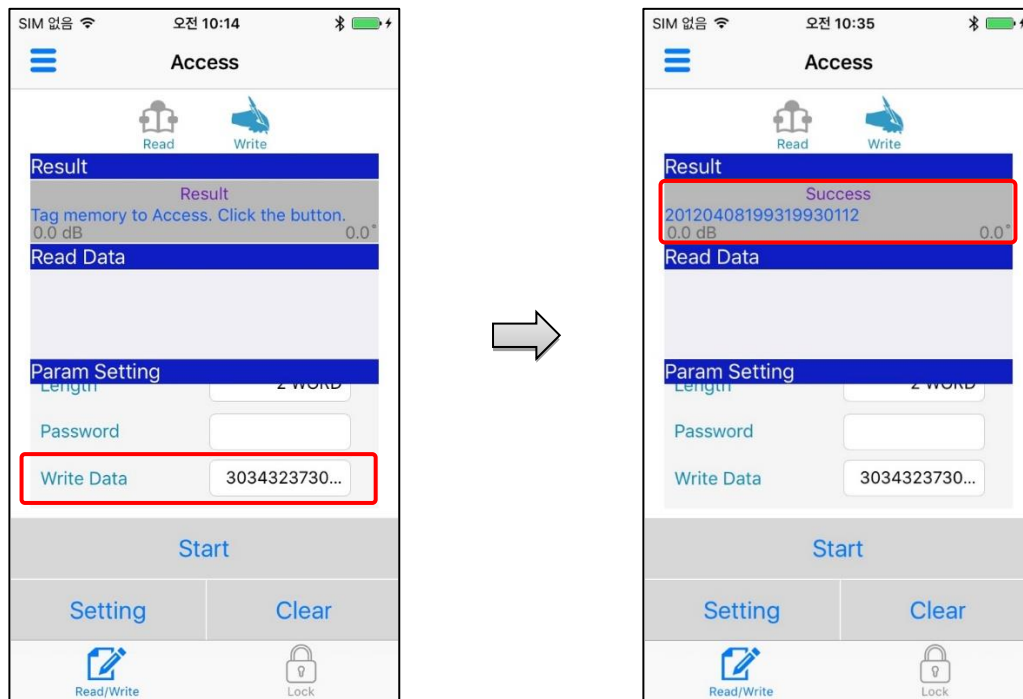
When you touch the barcode that is read, it asks if you want to write the selected barcode data to the RFID tag.

Press "Ok" on the pop-up window.

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As the pop-up window disappears, it moves to the "Write Memory" screen.

Unlike when it moves to the screen by choosing the menu, the selected data is decoded and entered as HEX values on the "Write Data".




Touch "Write" button and write Data to the selected RFID tag on the Inventory Screen.

It writes data to the selected tag with Selection Mask.

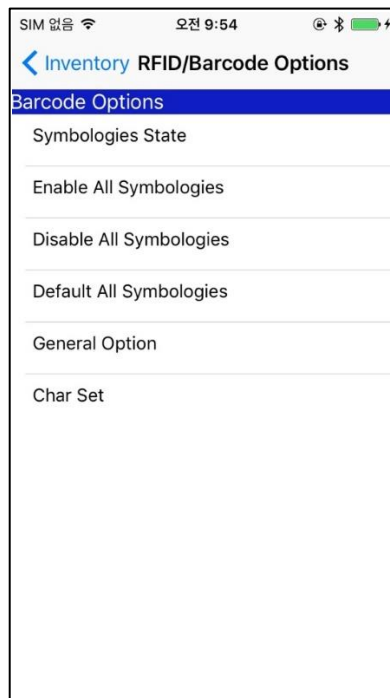
A caution is that once you write memory, the data in EPC bank is changed and when you retouch "Write" button, it is unable to write again since the pre-set value changed on the Selection Mask as EPC values are changed.


If you want to write identical data to multiple Tags, skip the Selection Mask part and read Barcode only to use "Write to Tag" function.

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3.2.5. How to change barcode options

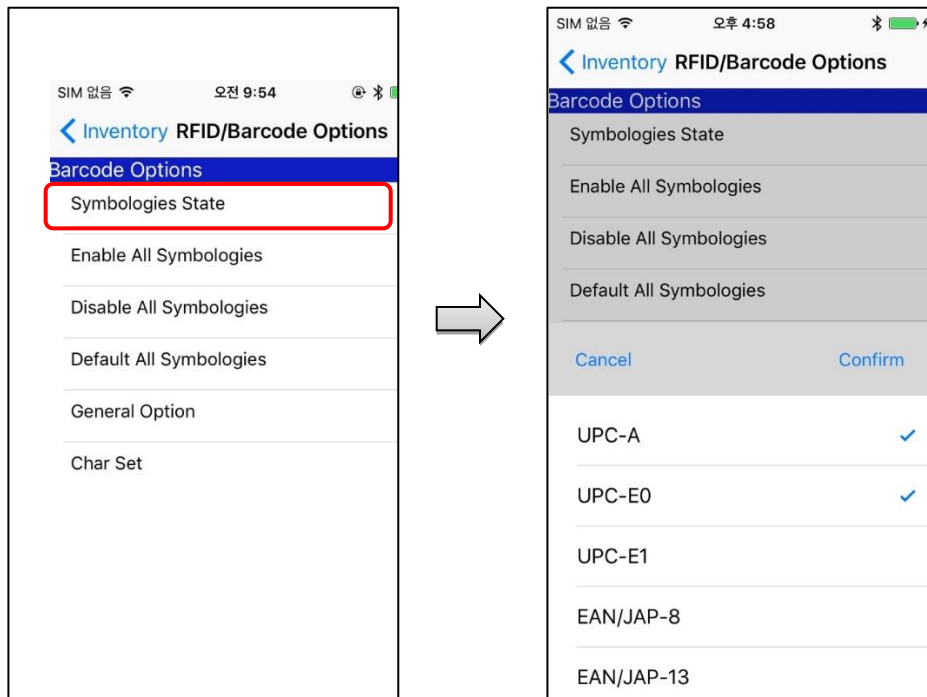
In the Barcode Option Menu, you can set whether to use Symbol about Barcode Module included in the device. After set the action mode of the device as Barcode, touch "Setting" button at the bottom of the page to see Barcode Options Menu.



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3.2.5.1. Symbolologies State

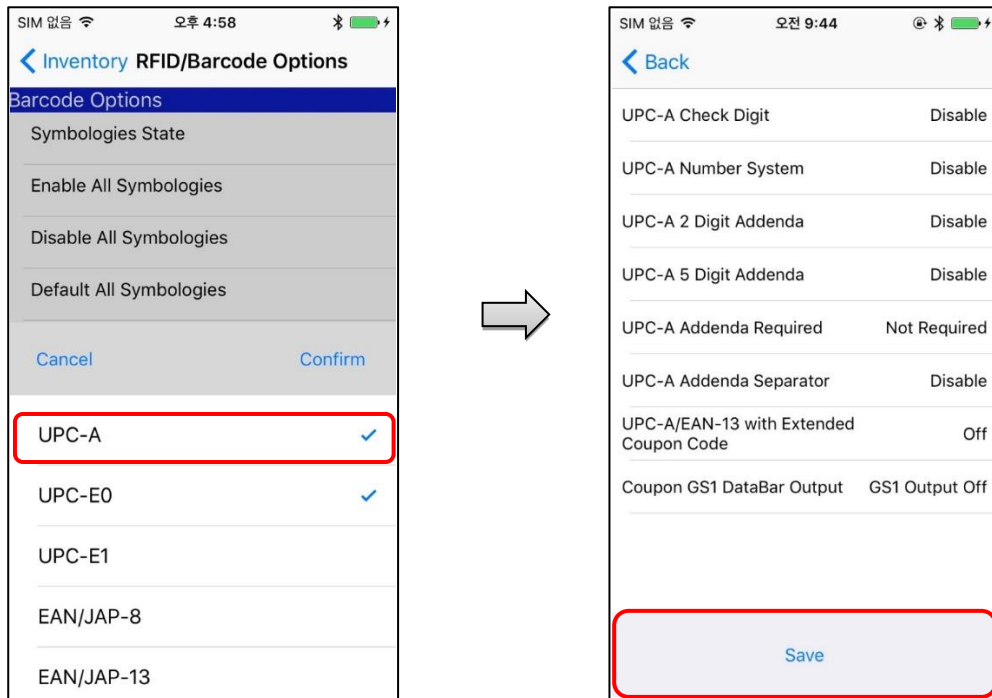
In the Symbolologies State, you can randomly select Barcode Symbolologies that Barcode Module recognizes.



If you activate many Barcode Symbolologies that Module is able to recognize, it has the merit of having multiple Barcode Symbolologies that will be recognized but eventually the performance becomes low since it takes long time to recognize Barcode that is read optically. Therefore, to enhance the performance, activate certain Barcode Symbolologies that you mainly use.

To change the setting of Symbolologies, press long desired Symbolologies on the list and it moves to the setting screen. On the screen, change the setting and press "Save" button to apply the new setting.

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3.2.5.2. Enable All Symbolologies

In Enable All Symbolologies Menu, it activates all Barcode Symbolologies that Barcode Module can recognize.

Touch "Enable All Symbolologies" and go to "Symbolologies State" to check if all Symbolologies are selected.


3.2.5.3. Disable All Symbolologies

In Disable All Symbolologies Menu, it deactivates all Barcode Symbolologies that Barcode Module can recognize.

Touch "Enable All Symbolologies" and go to "Symbolologies State" to check if all Symbolologies are unselected.

3.2.5.4. Default All Symbolologies

In Default All Symbolologies Menu, it sets all recognizable Barcode Symbolologies by Barcode Module as the default setting.

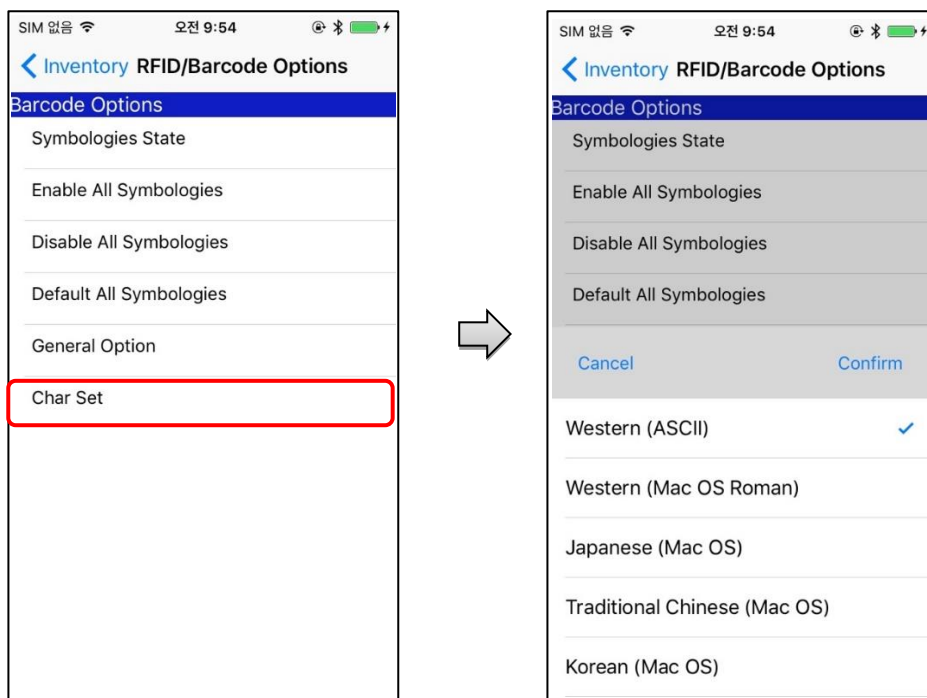
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3.2.5.5. General Option

You can set "General Option" that is applied when each symbology is recognized. The Setting Menu is different for each Module.

3.2.5.6. Char Set

When it displays the scanned Barcode Data, you can set it to certain characters.



3.3. Selection Mask

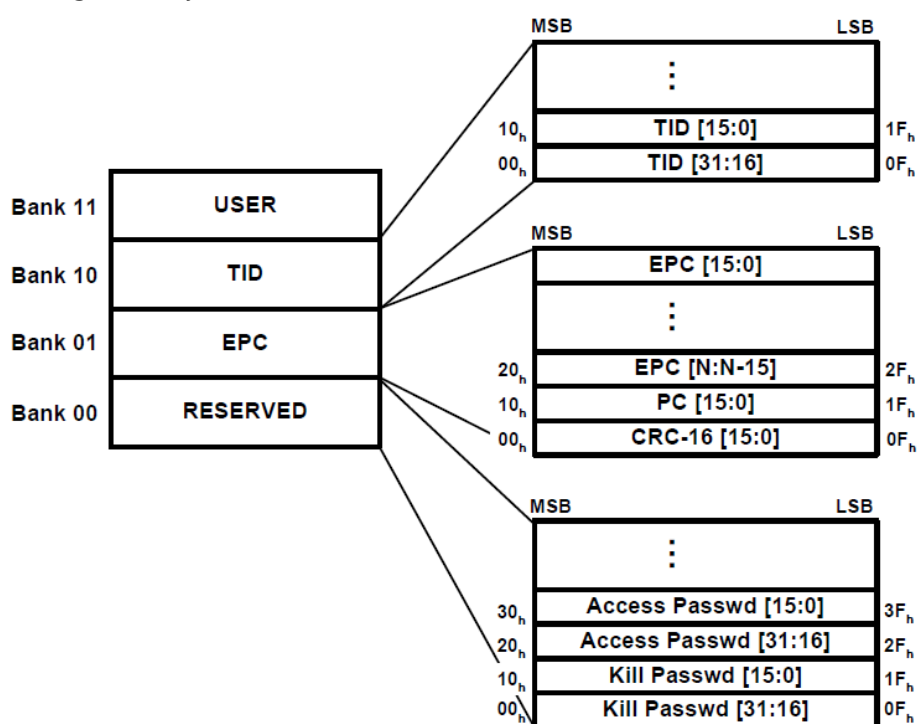
Selection Mask is a function related with RFID on all the screens excluding Stored Data and Device Options. In RFID Options, it can move to the Setting Menu of Selection Mask.

Among RFID UHF functions, Selection Mask is a function to approach tags that are under the certain conditions.

To understand Selection Mask, it is necessary to understand the structure of RFID tags and the logics that RFID devices read RFID tags.

3.3.1. Tag Memory

A RFID tag is the "IC Chip" that saves data. Therefore, tags have memory and save data in the memory. Memory of the tag consists of four main categories. The following illustration is the structure of the tag memory.




Reserved Memory includes Kill Password and Access Password.

In EPC Memory, the first WORD (00h ~ 0Fh) includes Stored CRC, and the second WORD (10h ~ 1Fh) includes "Stored PC". Then after (after 20h), the values are entered to recognize tags.

In TID Memory, the first 8bit (00h ~ 07h) includes the class identifier from ISO/IEC. After TID Memory Address 07h, it includes optional performance information and custom orders to recognize tags.

With User Memory optional performance, when tags realize the user's memory, you can write and read data in user's memory.

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3.3.2. Tag Query

A tag supports four Session Flags (S0, S1, S2, S3) and one Select Flag.

A Tag sets the assigned Session Flag or Select Flag about Selection Mask that the reader queries. Then the reader reads tag data based on specific Session Flag and Select Flag selected during the Inventory Round.

A Session Flag has A or B value. The basic value is A. A Select Flag has "Assert" status or "Deassert" status. The basic value is "Assert" status.

In accordance with Selection Mask conditions, a tag sets "Session Flag" or "Select Flag". Then it reads tags with conditions of "Session Flag" or "Select Flag". When a Session Flag or a Select Flag is not able to provide energy anymore, it becomes initialized based on a certain time standard. The standard of providing Energy to tags is that in case of the tags that are not provided power separately, they use electromagnetic wave as the energy to send the reader. Therefore, the energy supply time is similar with the Inventory Round time.

Flag	Tag energized	Tag not energized
S0 Session Flag	Indefinite	None
S1 Session Flag	500ms < Persistence < 5s	500ms < Persistence < 5s
S2 Session Flag	Indefinite	2s < Persistence
S3 Session Flag	Indefinite	2s < Persistence
Select Flag	Indefinite	2s < Persistence


The conditions of the Selection Mask are Target, Action, Bank, Offset, Length, and Pattern.

Target specifies a Session Flag or a Select Flag to set a Session Flag or a Select Flag when the conditions of the Selection Mask's Pattern set as Action.

Action specifies actions when the conditions of Bank, Offset, Length, and Pattern don't match or match.

The following chart shows the movement of Action.

Action	Tag Matching	Tag Not-Matching
0	assert SL or inventoried → A	deassert SL or inventoried → B
1	assert SL or inventoried → A	do nothing
2	do nothing	deassert SL or inventoried → B
3	negate SL or (A → B, B → A)	do nothing
4	deassert SL or inventoried → B	assert SL or inventoried → A
5	deassert SL or inventoried → B	do nothing

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6	do nothing	assert SL or inventoried → A
7	do nothing	negate SL or (A → B, B → A)

Bank specifies a memory of the tag to compare to the given Pattern.

Offset specifies the initial address that begins to compare Pattern at the assigned Bank in the unit of bit.

Length specifies the length of Pattern to be compared at the assigned Bank in the unit of bit. When the Pattern is longer than the Length, it compares based on the given Length.

For example, if you want to read tags that the values of EPC's PC start with 0x3000, you can specify the Selection Mask like the following illustration.

Mask Parameter	Value
Target	SL
Action	0
Bank	EPC
Offset	16bit
Length	16bit
Pattern	0x3000

To interpret the conditions of the Selection Mask in the above table, set "Select Flag" as Assert if the data matches that compares a value of 0x3000 starting from 16bit (1Word) at EPC Memory as much as to the length of 16bit (1Word). Set "Select Flag" as Deassert if the date does not match.


This condition setting of the Selection Mask of the tag sets the Flag of the Target under the condition as the designated status from the value of Action.

Then, from the reader, it reads tags that match to the condition in accordance with "Select Flag", "Session Target" and "Session Flag" that are set by the conditions of Inventory.

Select Flag specifies whether to read Select Flags in "assert" status or "deassert" status or both status.

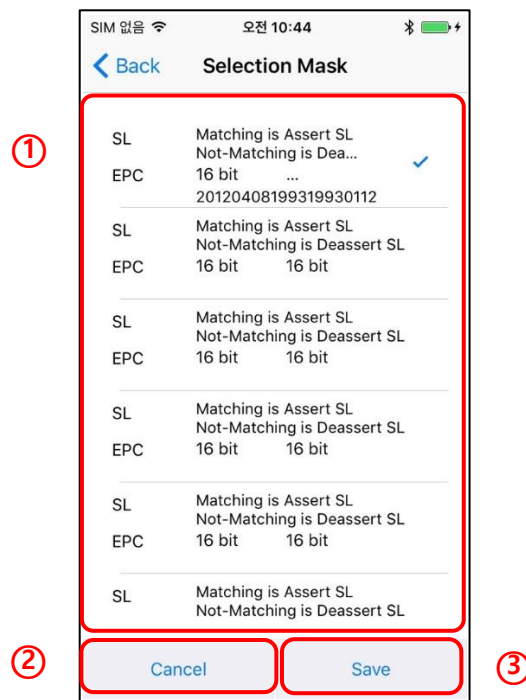
Session Target specifies a Session Flag (S0, S1, S2, S3) that will specify the conditions of the Session Flag.

Session Flag specifies whether to read Session Flags assigned as the Session Targets in A status or in B status or both statuses.


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3.3.3. Screen Composition

The illustration below is the structure of the Select Mask screen.

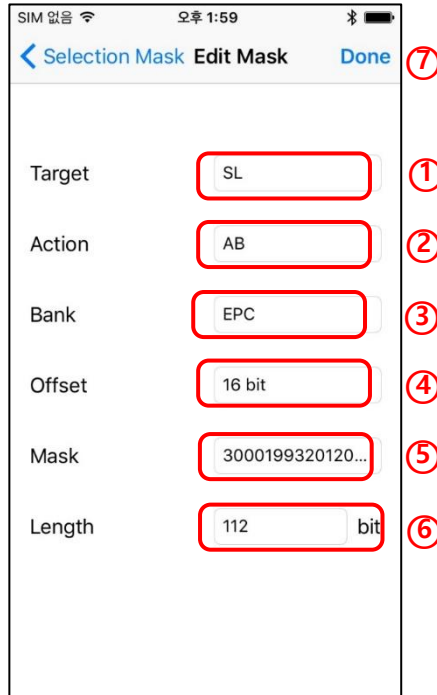


- ① **Mask List:** It specifies the conditions of Selection Masks. It specifies a maximum of 8. Touch the desired item to change the conditions on the Mask List and there will be a dialog box for the detail setting. It will be explained in detail in the Selection Mask Detail Screen Composition. If there is a check mark on the List, the corresponding Mask will be applied, if you don't want to use it, uncheck it and save.
- ② **Cancel:** It cancels the Selection Mask setting and returns to the previous page.
- ③ **Save:** It saves the specified conditions of Selection Masks in the Reader.

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3.3.4. Selection Mask Detail

On the Selection Mask screen, press long an item of the condition on the Mask List and you will see the screen below to specify detail conditions of the Selection Mask.




Target: it specifies a Flag to save the comparison result of the Selection Mask.

Target	Description	Note
S0	It means to save the comparison result of the Selection Mask in S0 of Session Flag.	
S1	It means to save the comparison result of the Selection Mask in S1 of Session Flag.	
S2	It means to save the comparison result of the Selection Mask in S2 of Session Flag.	
S3	It means to save the comparison result of the Selection Mask in S3 of Session Flag.	
SL	It means to save the comparison result of the Selection Mask in Select Flag.	

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- ① **Action:** It specifies the comparison method of the Selection Mask and the result.
Refer to the description of Action at Tag Query
- ② **Bank:** It specifies Tag Memory to be compared with Pattern of the Selection Mask.
Bank Memory that can be compared with the Selection Mask is EPC, TID, and User Memory.
- ③ **Offset:** It specifies the initial address where Pattern of the Selection Mask will be compared at the assigned Bank as a unit of Bit.
The initial address of the Selection Mask can be specified from 0bit to a maximum of 255bit.
- ④ **Mask:** It specifies a comparing value from the initial address assigned by the Bank assigned at the Selection Mask.
An input Mask value is Hex value and it is available to input up to 32 letters.
- ⑤ **Length:** It specifies the length to be compared with Pattern of the Selection Mask as a unit of Bit.
The length of Pattern and a letter is 8bit. Therefore, the maximum value of Length is 225bit to input.
- ⑥ **Done:** It saves the conditions of the Selections Mask that is specified.

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3.3.5. How to set a selection mask

ATID Reader Demo provides two ways of setting the Selection Mask.


One way is to set the details on the Selection Mask screen by approaching to Setting on the Inventory screen, the Read Memory screen, the Write Memory screen or the Lock Memory screen. The other way is simply to set the Selection mask on the Inventory screen.

On the Inventory, set the Operation Mode as RFID and touch "Start" button and perform Inventory on a peripheral RFID.

Press long (about 3 seconds) the RFID tag to set it as the Selection Mask.

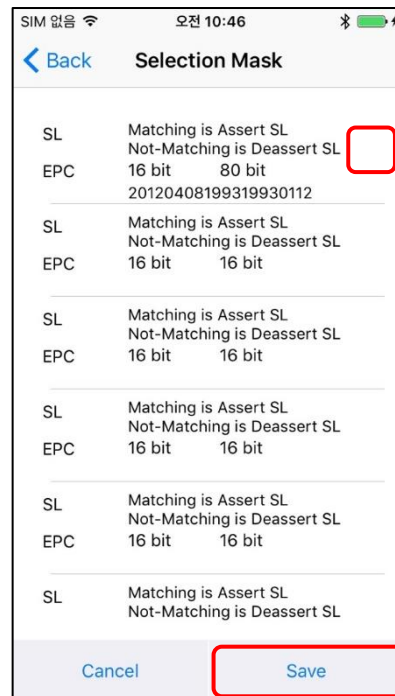
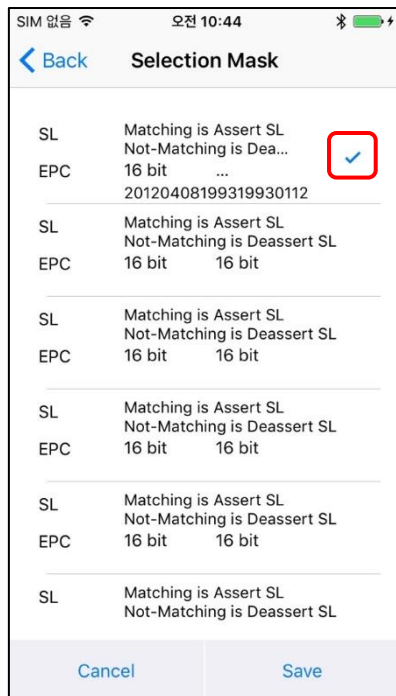
Then a dialog box will pop up asking if you want to tag the Mask to the selected data. If you want to, touch "Yes" button. (Refer to *3.2.4 How to read barcode and write them to tags*)


On the Inventory screen, select the Selection Mask by selecting the RFID tag and it basically sets the Selection Target as Select Flag.

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3.3.6. How to disable a selection mask

On the ATID Reader Demo, to disable a Selection Mask, uncheck the applicable box on the Selection Mask screen and touch "Save" button to finish disabling the Selection Mask.



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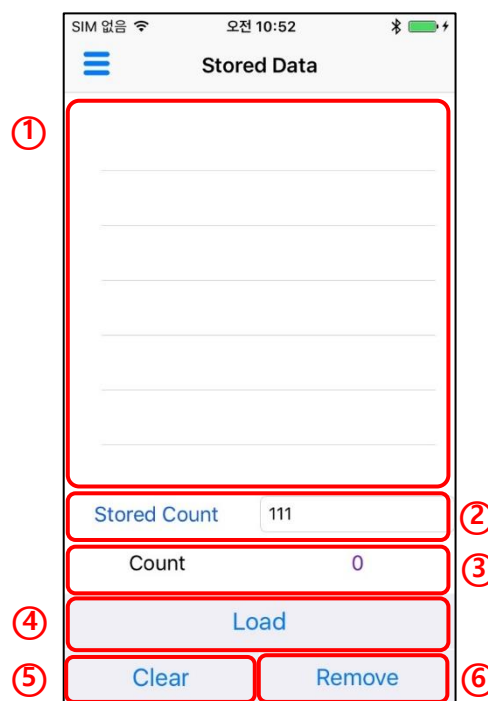
3.4. Stored Data

The Stored Data Demo is the Demo to read the stored data in the internal storage by reading RFID tags or Barcode when the Auto Save Mode option is on in the Inventory Demo or the stored data in the internal storage of the device that is read when the demo was not connected with the device.


(It does not support ATS100/ATS200)

3.4.1. Screen Composition

The Stored Data screen is shown in the illustration below.



- ① **Data List:** It shows the data loaded from the device.
- ② **Stored Count:** It shows the number of the stored data in the device.
- ③ **Count:** It shows the number of data on the Data List. Since redundant data are displayed on the Data list, they are counted as one in the Data Count.
- ④ **Load:** It reads data from the device.
- ⑤ **Clear:** It clears all Data List and initializes Data Count and Total Count as 0.
- ⑥ **Remove:** It removes all the stored data in the device.

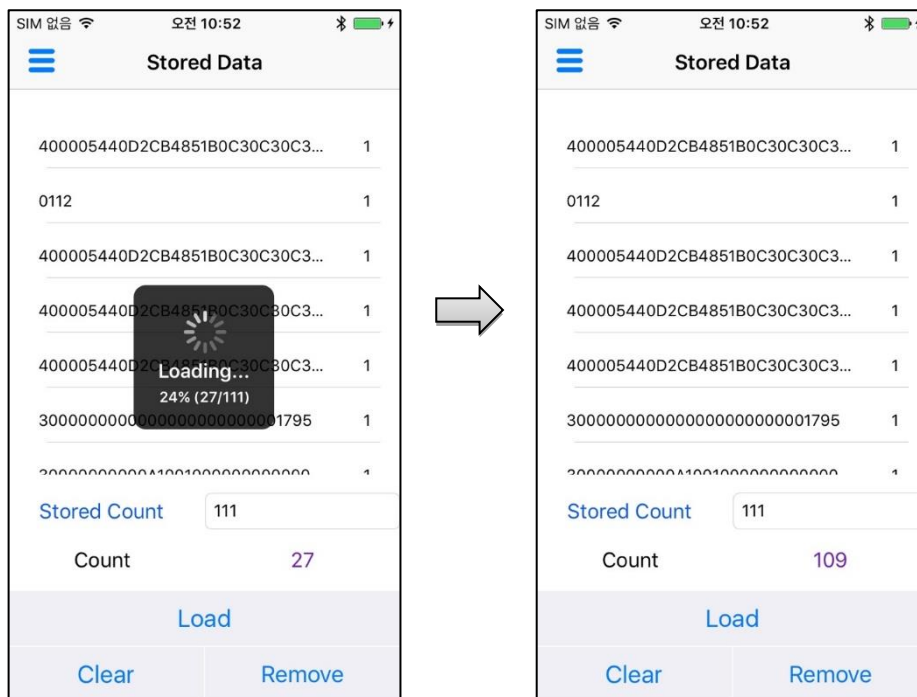
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3.4.2. How to load stored data

Check the Stored Count on the Stored Data screen. If there is stored data in the device, you can bring the data on the screen. Touch "Load" button to read the data from the device.

Once it starts reading the data from the device, it shows the loading status display dialog box. From the dialog box, you can see the status reading data from the device.

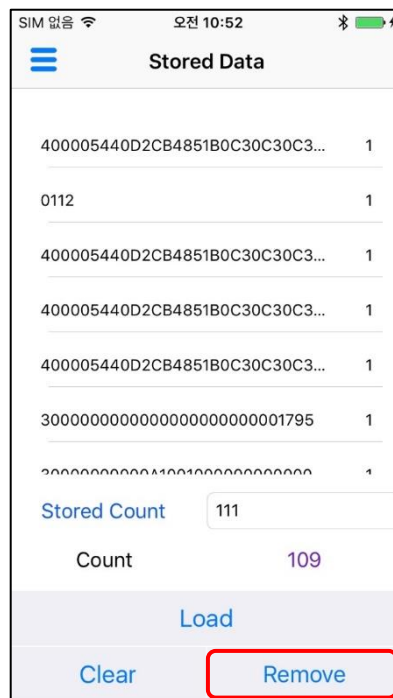
When it reads all the stored data, the dialog box will disappear and it will print the data on the Data list and update the count.




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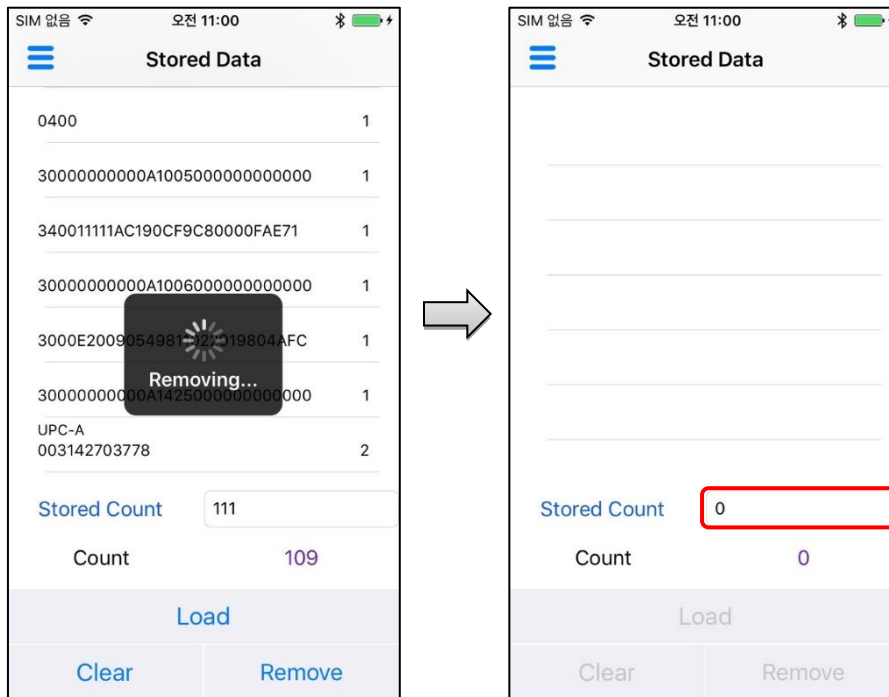
3.4.3. How to remove all stored data

There is a necessity to remove the stored data in the device if it has read the stored data in the device. The Stored Data screen provides the function to remove the stored data in the device. To remove all the stored data in the device, touch "Remove" button at the bottom of the screen.




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The time required to remove the stored data depends on the quantity of the stored data. While removing the data, the status display dialog box shows removing the data is in progress.



If all the stored data are removed, the status display dialog box will disappear. And when you check the Stored Count, you will see 0.

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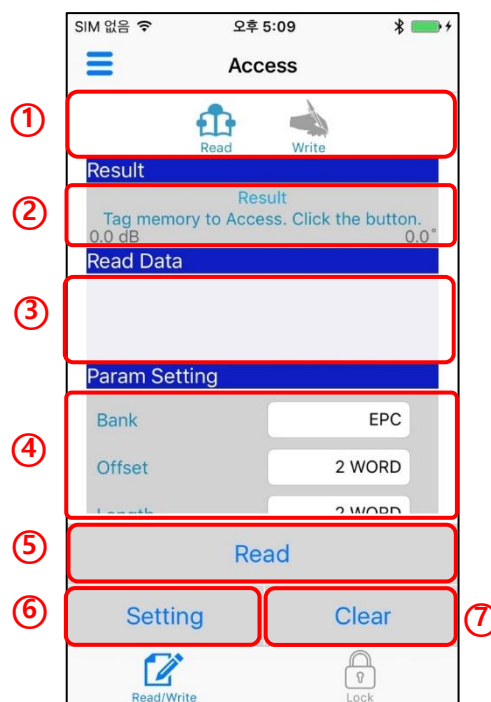
3.5. Access Memory

3.5.1. Read Memory


Among RFID (UHF) functions, Read Memory can use the function to read by specifying the memory of RFID tags.

3.5.1.1. Screen Composition

The structure of the demo screen of Read Memory is shown in the illustration below.



- ① **Action Mode:** It sets the action mode about Memory Access.
- ② **Result:** It prints the result, RSSI, and Phase after reading RFID tags and the EPC value of RFID tags that device approaches.
- ③ **Read Memory Value:** When the device read RFID tags normally, it prints the data as a unit of WORD.
- ④ **Read Memory Parameter:** It sets the setting to perform Read Memory.
- ⑤ **Read:** It enables the device to perform Read Memory.
- ⑥ **Setting:** It moves to the screen that you can set options about RFID actions.
- ⑦ **Clear:** It initializes the result and Read Memory Values.

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3.5.1.2. How to change read memory Option.


Read Memory Option sets the information to perform "Read Memory". Read Memory Option can be scrolled down with a finger.

To perform Read Memory, set the memory bank of the tag to be read and the initial address to be read at the assigned memory bank as the unit of WORD. Also set the length of the memory as the unit of WORD.

- ① Bank: Bank Option performs "Read Memory" and specifies which memory of the RFID tag to read. The readable tag memory banks are "Reserved", "EPC", "TID", and "User".
 - ② Offset: Offset Option specifies the initial address to read the Data of the assigned Memory Bank by performing "Read Memory". The assignable unit is WORD.
 - ③ Length: Length Option specifies the length to read the data of the assigned memory bank by performing "Read Memory"
- ※The Maximum Length of Readable Data with "Read Memory" at once is 64WORD.**
- ④ Password: Password Option sets the device setting to access tags when the RFID tag to perform Read Memory is locked.

When the RFID tag is locked, in the case of the Reserved Bank, it is not readable.

At this time, if you want to read the Data of the Reserved Bank, set the identical password with the Access Password that is stored in the tag and perform "Read Memory" on the tag. If the password is different from the Access Password that is stored in the RFID tag, the performance of "Read Memory" will fail.

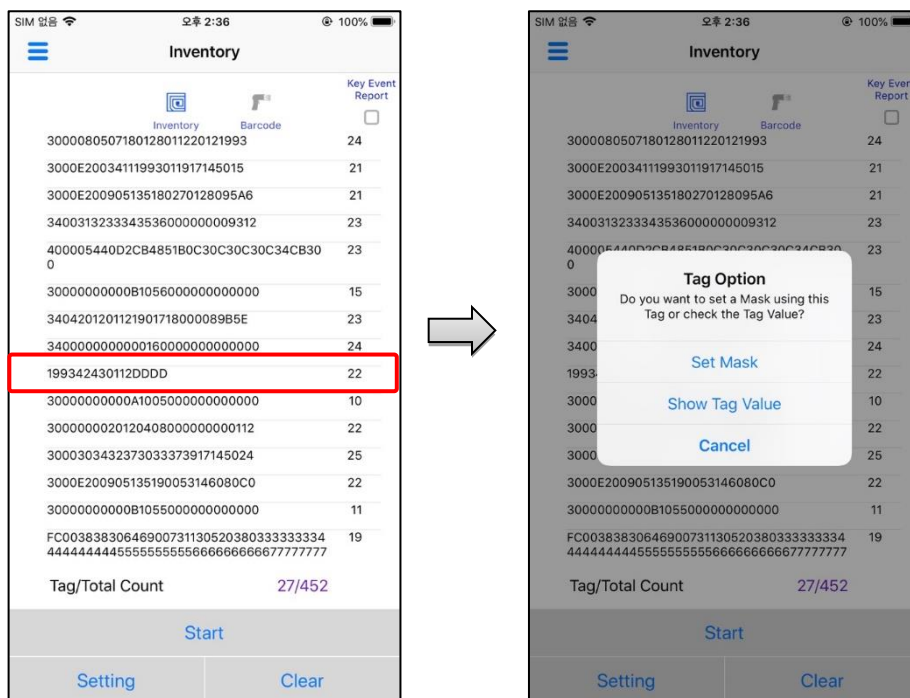
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3.5.1.3. How to read tag memory

To test reading RFID tags, it will read EPC values and 4 WORD from the EPC area of specific RFID tags. In EPC area, the offset of EPC values starts from 2WORD.


Generally before performing Read Memory, search tags via Inventory and approach the memory of the tags as applying one tag to a Selection Mask.

On the Inventory screen, perform Inventory and search the tag to read memory.



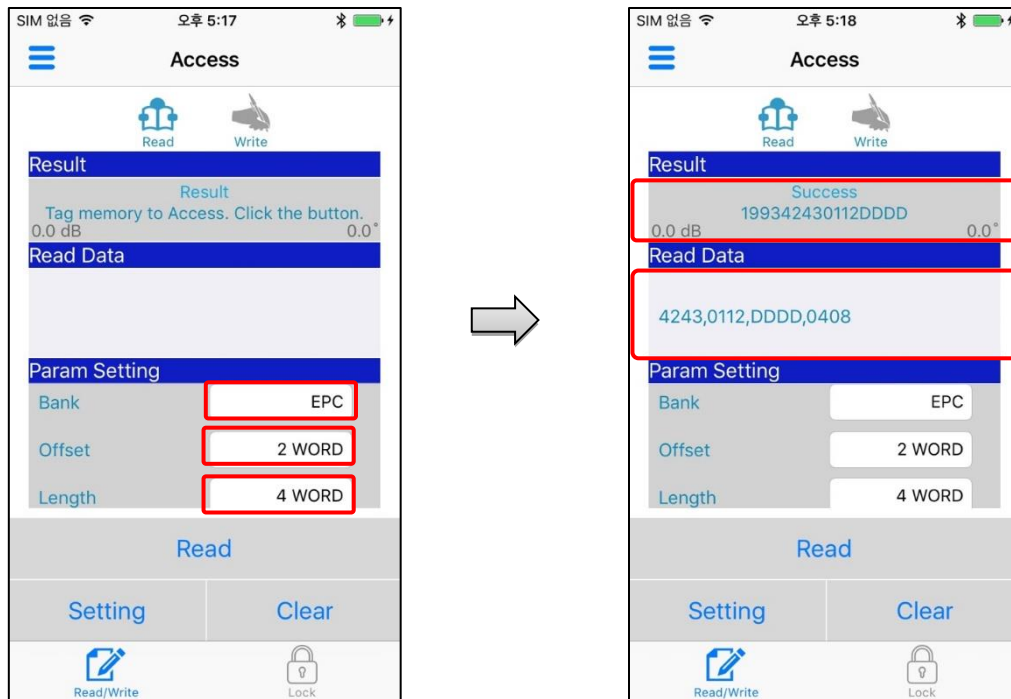
If the RFID tags to access are searched in the Inventory, stop the Inventory and touch the RFID tags to set as the Selection Mask.

To read unspecific tags, skip this part to move to the next.

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When it finishes setting the Selection Mask, it moves to the Read Memory screen from the Main Menu.

On the Read Memory screen, select EPC as the desired memory bank that RFID tags read at the Read Memory Parameter and set Offset as 2WORD and Length as 4WORD.



Once it's ready to read the Memory of RFID tags, touch "Read" button to operate.

Once it reads the Memory of the tags, it will print EPC of the tags that accessed to the EPC area and the result of Access on a message window. Then it will print the value of the tag memory on Read Memory Value.

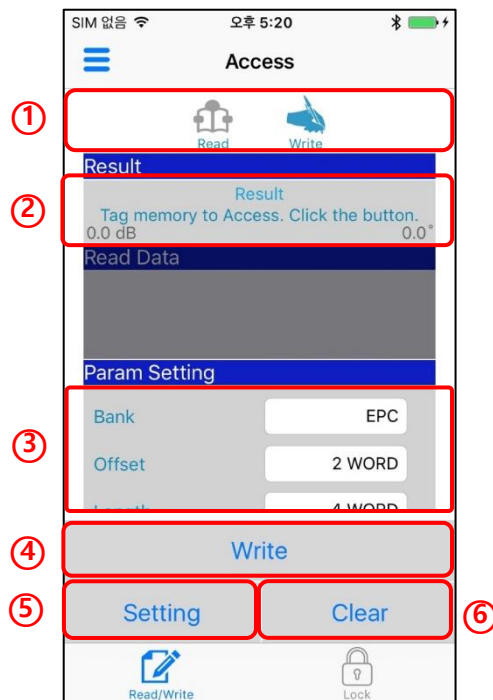
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3.5.2. Write Memory


Among RFID (UHF) functions, the Write Memory Demo can use the function to write data on the memory assigned to RFID tags.

3.5.2.1. Screen Composition

The structure of the Write Memory Demo screen is shown in the illustration below.



- ① **Action Mode:** It sets the action mode about Memory Access.
- ② **Result:** It prints the result, RSSI, and Phase after writing the EPC value of RFID tags that device approaches to and the Data on RFID tags.
- ③ **Param Setting:** It sets to perform "Write Memory".
- ④ **Write:** It makes the device to perform "Write Memory".
- ⑤ **Setting:** It moves to the screen that you can set Options about RFID actions.
- ⑥ **Clear:** It initializes the result.

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3.5.2.2. How to change write memory option

Write Memory Option can set the required information to perform "Write Memory". You can scroll down the Write Memory Option with a finger.

To perform Write Memory, specify the initial address that the assigned memory bank will use and the tag that will write the data as the unit of WORD(4 Letters).


- ① Bank: Bank Option can specify which memory's value of RFID tags will be changed by performing Write Memory. The changeable tag memory banks are "Reserved", "EPC", "TID", and "User".
- ② Offset: Offset Option specifies the initial address to write the data of the assigned memory bank by performing Write Memory. The assignable unit is WORD.
- ③ Write Data: The Write Data Option performs Write Memory and input the data to write the data on the assigned memory bank. The input data should be in the unit of WORD(4 Letters).

※The Maximum Length of Usable Data with using "Write Memory" at once is 32WORD

- ⑤ Password: The Password Option sets the device setting to access tags when the RFID tag to perform Write Memory is locked.

When the RFID tag is locked, in the case of Reserved Bank, it is not readable.

At this time, if you want to read the Data of Reserved Bank, set the identical password with the Access Password that is stored in the tag and perform "Write Memory" on the tag. If the password is different from the Access Password that is stored in the RFID tag, the performance of "Write Memory" will fail.

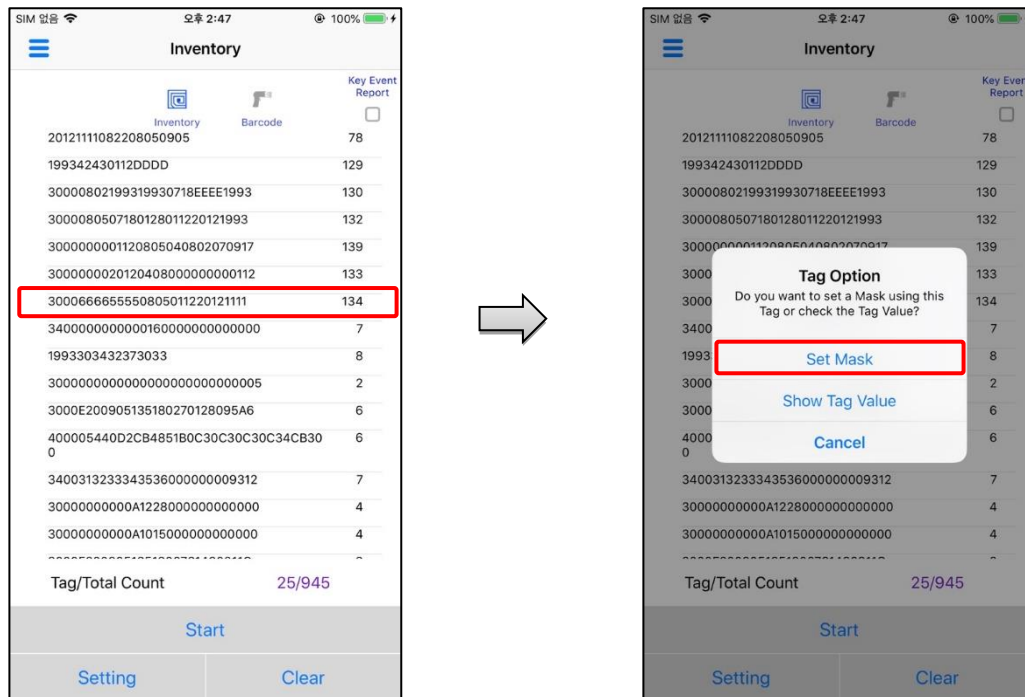
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3.5.2.3. How to write tag memory


To test writing RFID tags, it will write EPC values in 4WORD in the EPC area of specific RFID tags. The value to write in the EPC area is "12345678". The initial address of EPC values in the EPC area starts from 2WORD.

Generally, not to write memory on other tags, it searches tags via Inventory and based on EPC, it accesses to the memory of the tag by tagging one tag on the Selection Mask.

Perform Inventory on Inventory screen to search tags to read the Memory.



When RFID tags that Inventory desires to Access are searched, stop Inventory and touch the RFID tags to set them as Selection Masks.

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Once you set the Selection Mask, move to the Write Memory screen from the Main Menu.

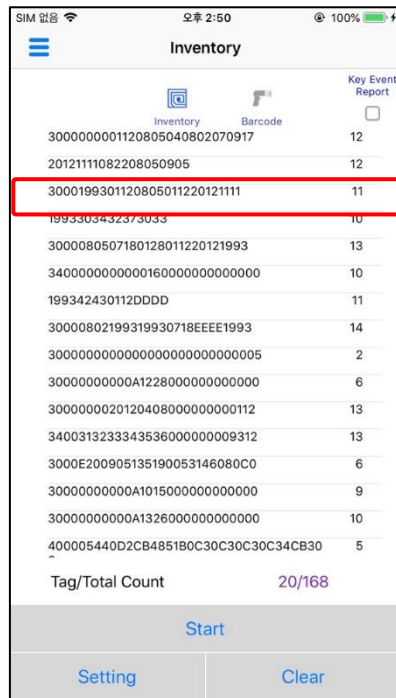
On the Write Memory screen, select the memory bank that Write Memory Parameter will write on the RFID tags as EPC and set the initial address as 2WORD. Then input the data value in Write Data.




When it's ready to write data on the Memory of RFID tags, touch "Write" button to write the data. If the data is written normally on the memory of the tags, it will print EPC of the accessed tags in the EPC area and the Access result on a message window.

If the data of the EPC area has changed from previous EPC values, uncheck the Selection Mask setting to read the changed tags since the preset EPC values via Selection Mask is different.

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Disable the Selection Mask setting and perform Inventory, you will see it's written normally on the Tag.

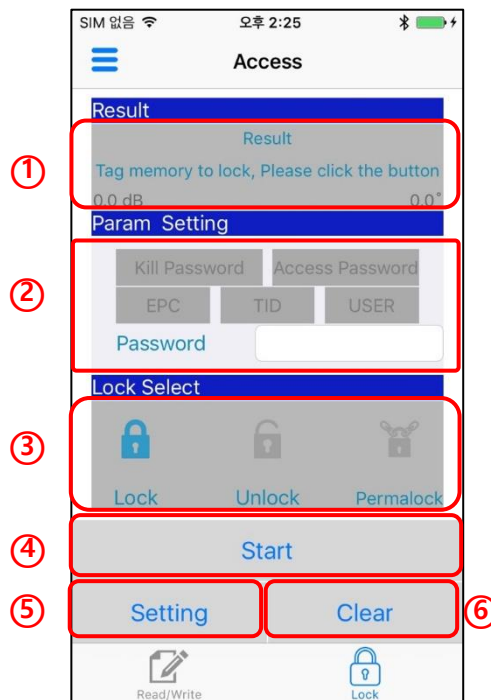
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3.5.3. Lock Memory


Among the functions of RFID (UHF), Lock Memory Demo function is to lock or unlock tags.

3.5.3.1. Screen Composition

The demo screen of Lock Memory is shown in the illustration below.




- ① **Result:** It prints the result of actions after the device locks or unlocks RFID tags and EPC of RFID tags that the device accesses to.
- ② **Param Setting:** It specifies the settings to perform Lock Memory.
- ③ **Lock Select:** It selects which actions the device will perform on tags. The options are lock, unlock, and permanent lock.
- ④ **Start:** It performs the selected Action from Lock Select.
- ⑤ **Setting:** It moves to the setting to specify the Option settings related with RFID actions.
- ⑥ **Clear:** It initializes EPC and Message.

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3.5.3.2. How to change lock memory option

- ① **Kill Password:** The Kill Password option is when it performs Lock, Unlock, Permalock, it enables Offset to set the Kill Password area with the Length from 0WORD to 2WORD as the target work in the reserved area of RFID tags.
When the Kill Password area is locked by Lock or Permalock, it is unable to unlock, lock, read and write unless you set the Password identically with the Access Password set by the tag.
It is able to duplicate the settings of Kill Password, Access Password, EPC, TID, User option. The target work areas with duplicated settings will be processed at once when it performs Lock, Unlock or Permalock.
- ② **Access Password:** The Access Password option is when it performs Lock, Unlock, and Permalock, it enables Offset to set the Access Password area with the Length from 2WORD to 2WORD as the target work in the reserved area of RFID tags.
When the Access Password area is locked by Lock or Permalock, it is unable to unlock, lock, read and write unless you set the Password identically with the Access Password set by the tag.
It is able to duplicate the settings of Kill Password, Access Password, EPC, TID and User option. The target work areas with duplicated settings will be processed at once when it performs Lock, Unlock or Permalock.
- ③ **EPC:** The EPC option is when it performs Lock, Unlock and Permalock, it sets the EPC bank area of RFID tags as the work target.
When the EPC area is locked by Lock or Permalock, it is unable to unlock, lock, read and write unless you set the Password identically with the Access Password set by the tag.
It is able to duplicate the settings of Kill Password, Access Password, EPC, TID and User option. The target work areas with duplicated settings will be processed at once when it performs Lock, Unlock or Permalock.
- ④ **TID:** TID option is when it performs Lock, Unlock and Permalock, it sets the TID bank area of RFID tags as the work target.
When the TID area is locked by Lock or Permalock, it is unable to unlock, lock, read and write unless you set the Password identically with the Access Password set by the tag.
It is able to duplicate the settings of Kill Password, Access Password, EPC, TID and User option. The target work areas with duplicated settings will be processed at once when it performs Lock, Unlock or Permalock.

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- ⑤ User: The User option is when it performs Lock, Unlock, Permalock, it sets the User bank area of RFID tags as the work target.

When the User area is locked by Lock or Permalock, it is unable to unlock, lock, read and write unless you set the Password identically with the Access Password set by the tag.

It is able to duplicate the settings of Kill Password, Access Password, EPC, TID and User option. The target work areas with duplicated settings will be processed at once when it performs Lock, Unlock or Permalock.


- ⑥ Password: The Password option is a setting to access to tags when the RFID tags to perform Lock, Unlock, Permalock are locked.

When RFID tags are locked, it is unable to lock or unlock the area that is locked. To unlock or lock the memory of the specific area of the locked RFID tags, set the same Password as the Access password stored in the tags. Then you will be able to lock or unlock the tags by performing Lock, Unlock, and Permalock on the desired tags.

If the Password is different from the Access Password stored in the RFID tags, the performance of Lock, Unlock, and Permalock will fail.

3.5.3.3. How to set access password in tags

To test the way to lock RFID tags, it will set the Access Password of the Reserved Area of

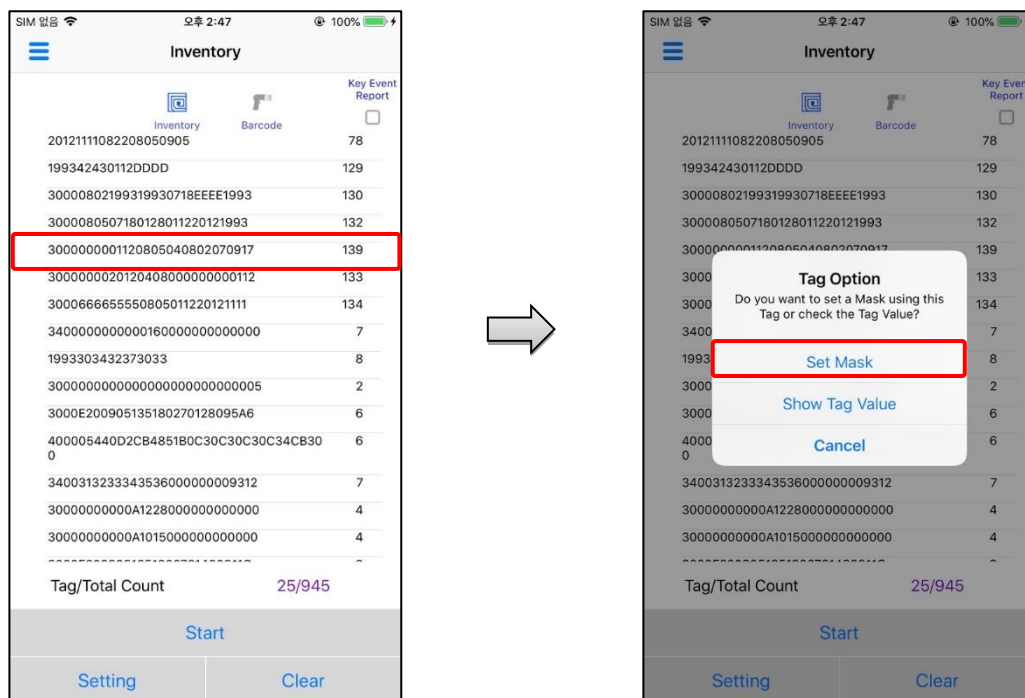
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the specific RFID tags and lock the Access Password.


The length of the Access Password is 2WORD that starts from 2WORD in the reserved area.

Generally, before performing "Lock Memory", it accesses to the memory of the tags by tagging a tag on the Selection Mask based on EPC after searching tags in Inventory.

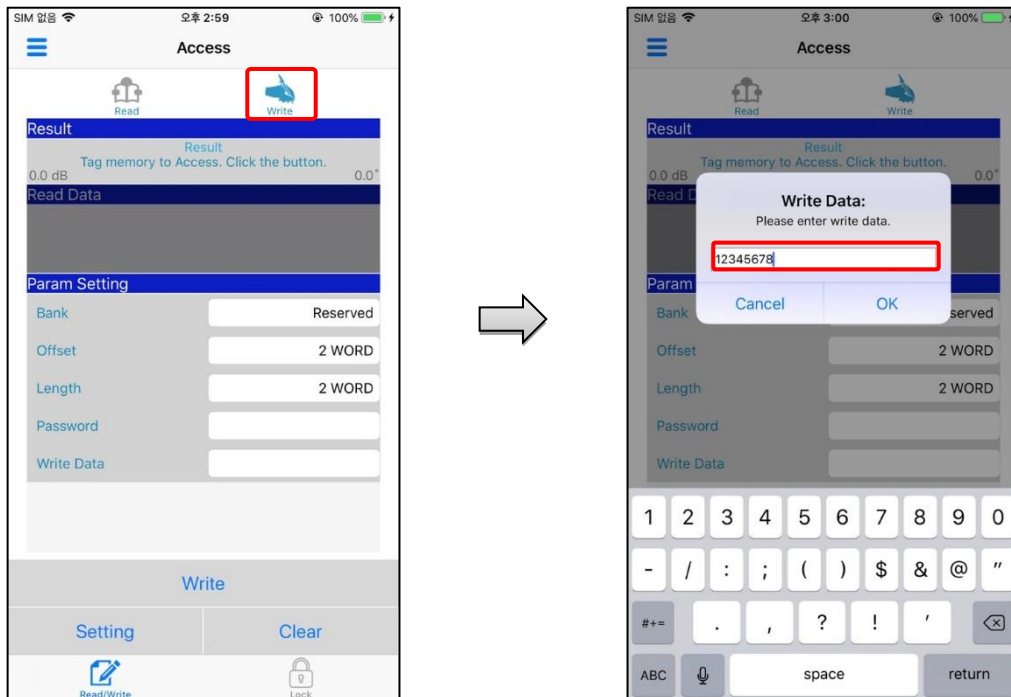
In Inventory, perform Inventory and search tags to read the memory.




When the RFID tags to be accessed are searched in Inventory, stop the Inventory and touch the searched RFID tags to set them as the Selection Mask.

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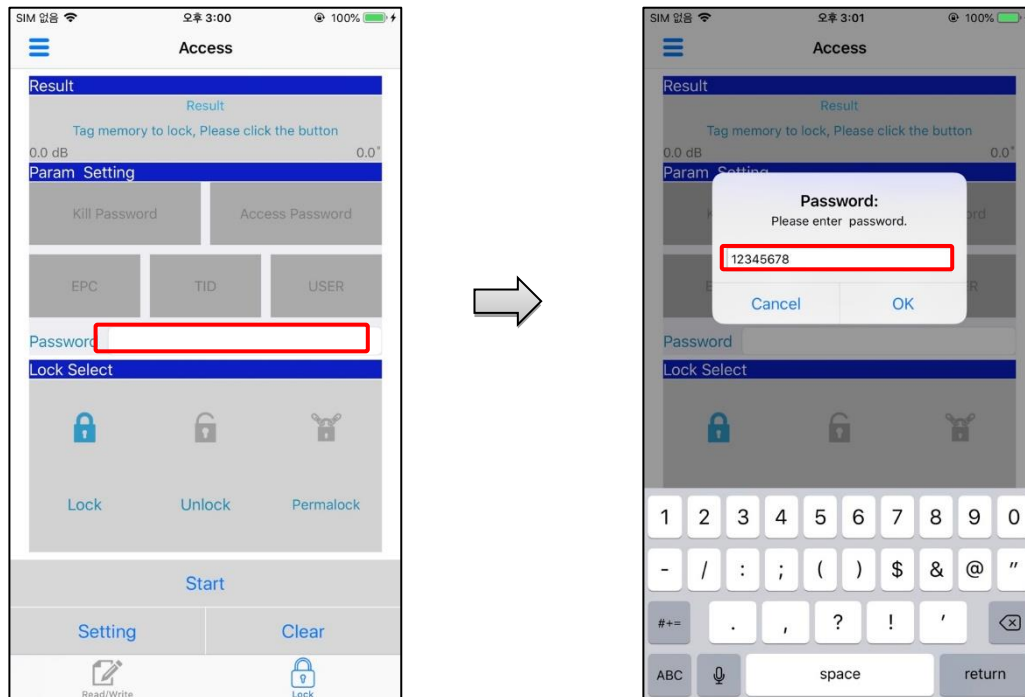
Once you set the Selection Mask, move to the Access Memory from the Inventory Menu.
Switch to the Write Memory Mode from the Access Memory screen.




On the Write Memory screen, set Bank as Reserved and Offset as 2WORD. Input "12345678" in Write Data and touch "Start" button to perform Write Memory. Then it will set the Password.

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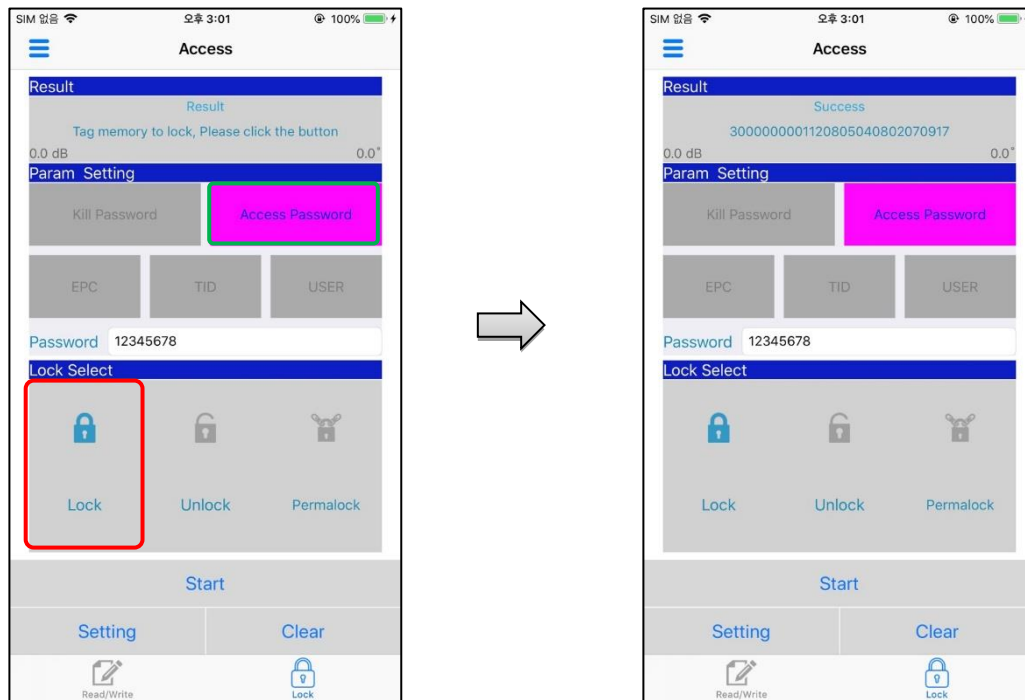
Once you set the Access Password, set the access authority of Access Password of the Tags that the device desires to access.



Touch the value of Password in Lock Memory Parameter and input the Access Password that is set on the RFID tags.


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To lock the Access Password, select the Access Password in the Param Setting.



Once it's ready to lock RFID tags, select "Lock" and touch "Start" button to lock the Access Password area.

Now if the RFID tag does not match to the Access Password, it is unable to write or read on the Access Password area.

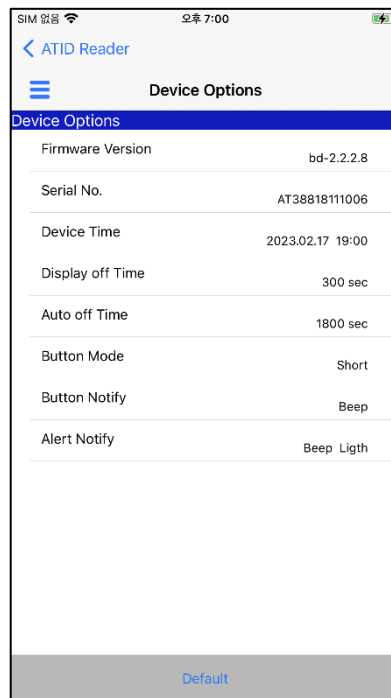
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3.6. Device Options


Device Options Demo can change the device setting.

3.6.1. Screen Composition

The Device Options Demo screen is shown in the illustration below.



Option List: It is a list that shows device options. List items display Names and the setting values. Touch options to set.

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3.6.2. Firmware Version

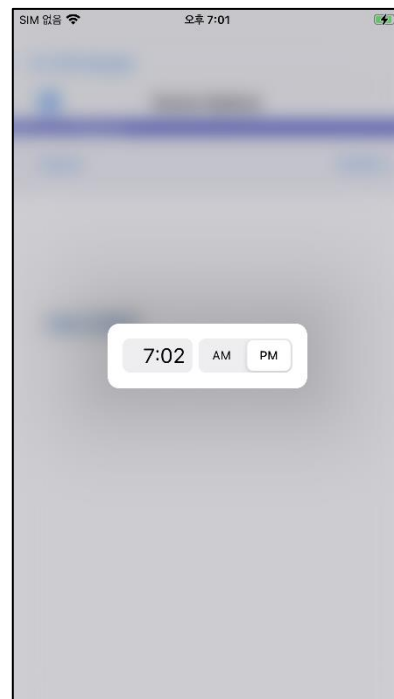
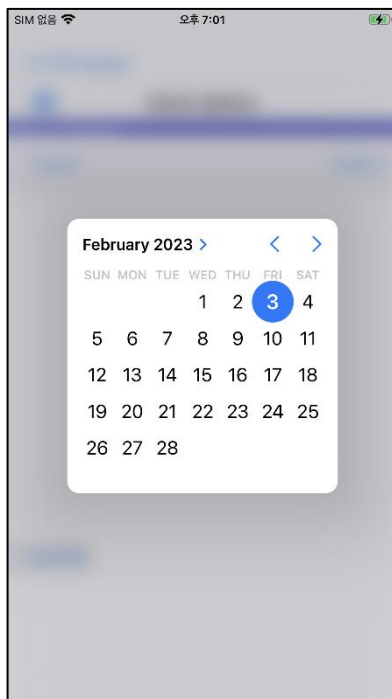
Firmware Version shows the version of the main program that is operated in the main device.


3.6.3. Serial No

As the only number to manage the device separately, Serial No Section shows the Serial Number that manages the device.

3.6.4. Device Time

It informs the time that device displays. Select the option to change the setting. The screen to set the time is shown in the illustration below. (In case of devices without Display, it does not support. Ex) ATS100/ATS200)



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3.6.5. Display off Time

When the device has no action for a specified time period, you can set the time to turn off the display of the device automatically. When the value is 0, it will not be off. When the value is greater than 1, and there is no action for a specific time period, the display of the device will be off. It is available to set a value larger than 20 sec. When it is connected with Demo, it will not be off. (In case of devices without display, it does not support. Ex) ATS100/ATS200)

3.6.6. Auto off Time

You can set the time to turn the device off if there is no action for a specified time period. The device will be off if there is no action in accordance with Auto off Time set after the display is off.

3.6.7. Button Mode

You can set the time to notify an alert that is set in Button Notify.
There are three options: None, short, and long.

3.6.8. Button Notify

You can select types of alert to notify when you push the button of the device.
There are three types: beep, vibration, and light. Multi-selection is available. (In the case of ATS100/ATS200, it does not support the light)

3.6.9. Alert Notify

You can select types of alert to notify when the device works.
There are three types: beep, vibration, and light. Multi-selection is available. (In the case of ATS100/ATS200, it does not support the light)