COMMUNICATION & UBIQUITOUS & SOLUTION

SHARK User Guide

February 13th, 2017
Ver. 17021301

UHF RFID Reader

RFID Reader & Tag

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1. Revision History

This section provides you with how this document is organized

1. Revision History

Document Number	Description	Revision Date
2016080900	Initial Release	August 2016
2017021300	Add How to download SHARK F/W	February 2017

2. Scope of Document

This User Guide is intended for use by any person who needs to operate or to troubleshoot problems with the SHARK.
The SHARK provides Radio Frequency Identification (RFID), and BARCODE scanning functionality.
The unit can be used stand alone or paired with BLE enabled host device (such as a smart phone).

- ✓ Configurations

2. Scope of Document

2. 1 Configurations

2. 1. 1 SHARK with RFID and BARCODE Imager

[TABLE 2.1.1] SHARK with RFID and BARCODE Imager

Configuration	Description
SHARK-R300-KR	✓ KR (with imager)
SHARK-R300-US	✓ US (with imager)
SHARK-R300-EU	✓ EU (with imager)
SHARK-R300-J1	✓ JP, high power (with imager)
SHARK-R300-J2	✓ JP, low power (with imager)
SHARK-R300-CN	✓ CN (with imager)

2. 1. 2 SHARK without RFID

[TABLE 2.1.2] SHARK without RFID

Configuration	Description
SHARK-R100	✓ (with imager)

2.1.3 SHARK without BARCODE Imager

[TABLE 2.1.3] SHARK without BARCODE Imager

Configuration	Description
SHARK-R200-KR	✓ KR (no imager)
SHARK-R200-US	✓ US (no imager)
SHARK-R200-EU	✓ EU (no imager)
SHARK-R200-J1	✓ JP, high power (no imager)
SHARK-R200-J2	✓ JP, low power (no imager)
SHARK-R200-CN	✓ CN (no imager)

2.1.4 Accessories

[TABLE 2.1.4] Host Adapters

Item	Part Number
Cradle	✓ CRD-SHARK-001C
Cradle power supply 100-240VAC, 5V, 2A	✓ CHPWRS-SHARK-001C
Charging cable	✓ CHCBL-SHARK-001C
Micro USB cable	✓ MUSBCBL-SHARK-001M
Lanyard	✓ LNYD-SHARK-001L
Handle	✓ HDL-SHARK-001H
Lithium-ion battery	✓ BTRY-SHARK-001L

3. Getting Started

This Section shows ICONs, operational controls and location of major components used when using SHARK.
Detailed Contents are as follows.

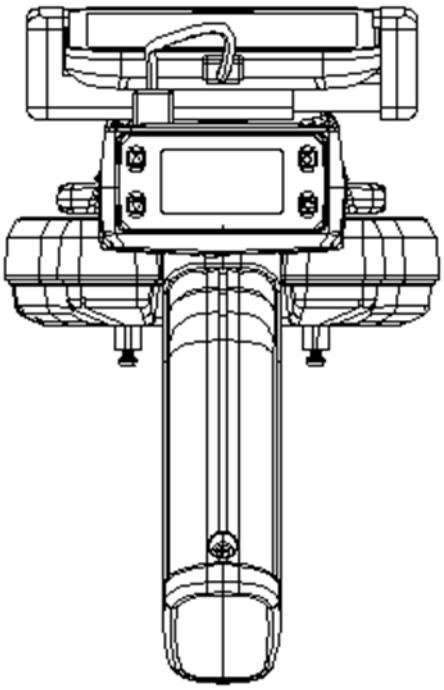
- ✓ External View
- ✓ LCD Control Panel
- ✓ Side Buttons and Lights
- ✓ ICON Definition

3. Getting Started

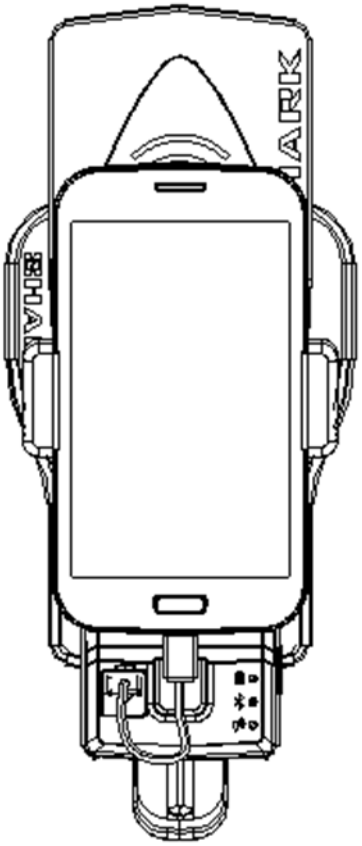
3. 1 External View

There are 3 types of SHARK; Integrated Product, only for RFID, and only for BARCODE. If Product type is only for RFID(without BARCODE), appearance is same with integrated product. But it cannot use BAROCDE scanning functionality. If Product type is only for BARCODE(without RFID), There is no RFID antenna.

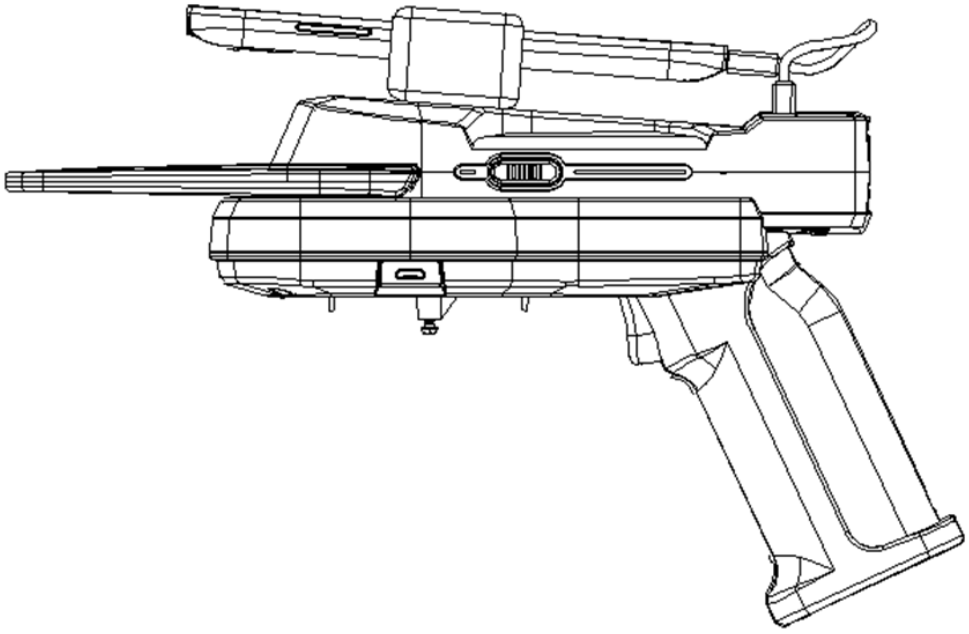
3.1.1 Integrated Product – External view



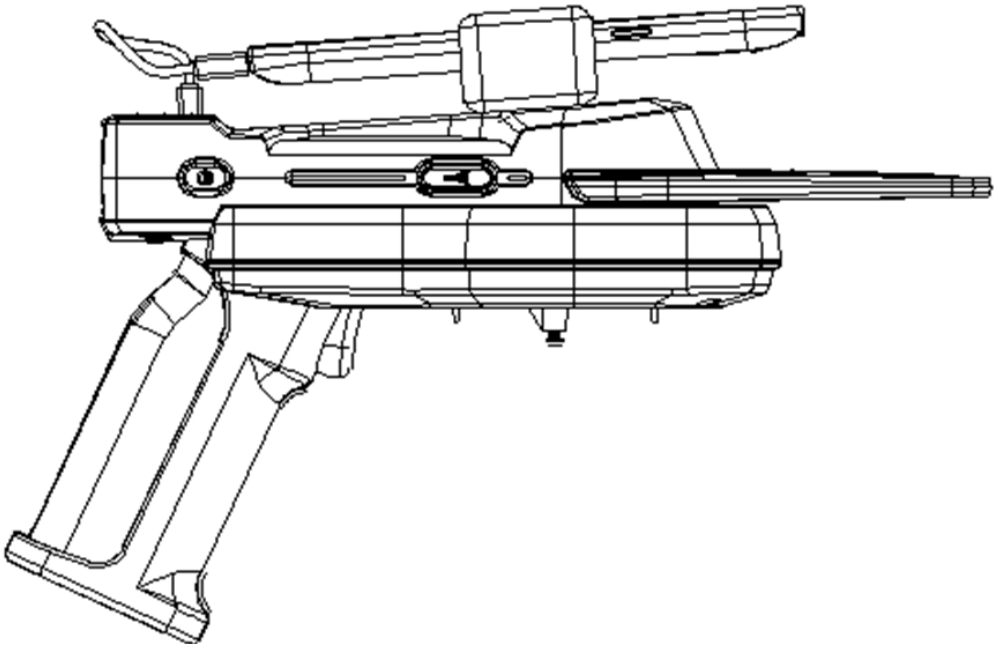
<Fig 3.1.1> Front of SHARK



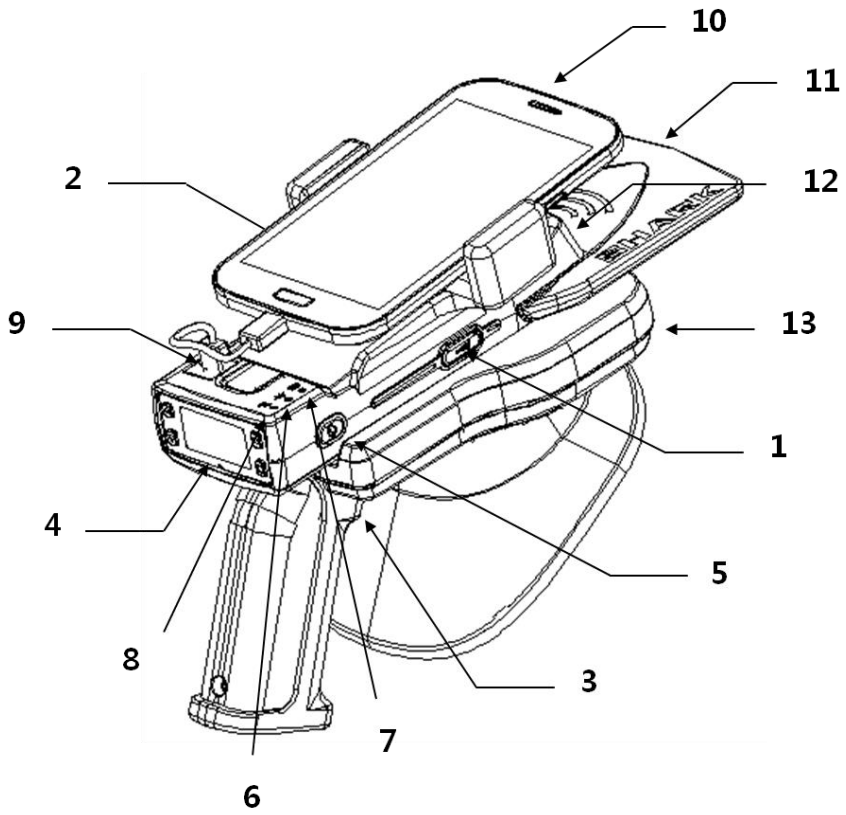
<Fig 3.1.2> Upper Side of SHARK



<Fig 3.1.3> Left Side of SHARK



<Fig 3.1.4> Right Side of SHARK



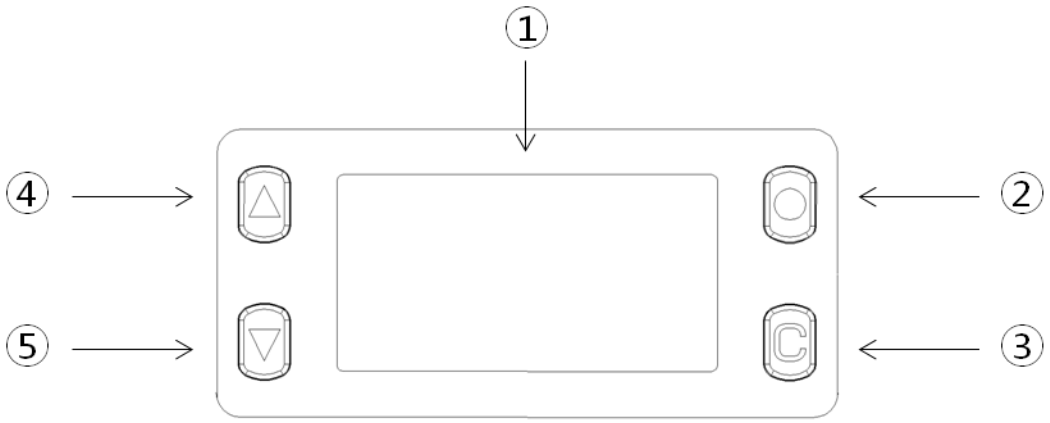
<Fig 3.1.5> Compartment of SHARK (Integrated Product)

[TABLE 3-1-1]

No.	Compartment
1	RFID Hot Key
2	BARCODE Hot Key
3	GUN Button
4	Control Panel
5	Power Button
6	Battery Charging LED
7	Bluetooth LED
8	Data LED
9	Micro USB(Type B)
10	Smart Phone
11	RFID Antenna
12	BARCODE
13	Cradle

3. 2 LCD Control Panel

The control panel contains the LCD that indicates operation and buttons that you may need to press during operation. Buttons and LCD are described in Figure 3.2.1. Description for each are located in Table 3-2-1, 3-2-2.



<Fig 3.2.1> Control Panel

[TABLE 3-2-1]

No.	Control Panel Components
1	LCD
2	SELECT Button
3	CANCEL Button
4	UP Button
5	Down Button

[TABLE 3-2-2] Description of Control Panel Buttons

Button	Function
OK(Short Key)	✓ Enter the SHARK menu in non-menu state ✓ Select menu parameter
CANCEL(Short Key)	✓ Escape SHARK menu in menu State ✓ Move to top-menu
CANCEL(Long key)	✓ Clear RFID or BARCODE Data in non-menu state
UP(Short Key)	✓ Move through menu or menu parameter in menu state ✓ Amplify RFID Power in non-menu state
Down(Short Key)	✓ Move through menu or menu parameter in menu state ✓ Attenuate RFID power in non-menu state

NOTE

- ✓ Short Key: Press and Release Key in less than a second
- ✓ Long Key: Press Key during about 1~2 seconds.

3. 3 Side Buttons and Lights

The side buttons and lights are labeled in Figure 3.1.5. Descriptions for each are located in Table 3-3-1, Table 3-3-2 and 3-3-3.

[TABLE 3-3-1] Description of Side Buttons

Button	Function
Power (Long Key)	✓ Power On/Off
RFID Hot Key (Short Key)	✓ RFID Operation (Regardless of Operation Mode)
BARCODE Hot Key (Short Key)	✓ BARCODE Operation (Regardless of Operation Mode)

[TABLE 3-3-2] Description of LED

LED	Status	LED
Battery Charging LED	On	✓ Battery is Charging
	Off	✓ Battery is Not Charging
Bluetooth LED	On	✓ Bluetooth Pairing Success
	Off	✓ Bluetooth Pairing Fail
Data LED	On	✓ The SHARK is reading data
	Off	✓ The SHARK is not reading data

3. 4 ICON Definition

The following ICONs are used throughout SHARK LCD to convey certain information

[TABLE 3-4-1]

ICON	ICON TYPE	Description
	SJARK Mode	RFID Mode
	SHARK Mode	Barcode Mode
	Communication Path	BLE(Paring Complete)
	Communication Path	BLE(Paring Fail)
	Communication Path	USB
	Communication Path	HID
	Option	Volume Max
	Option	Volume Mid
	Option	Volume Min
	Option	Vibration
	Option	Option OFF
	Battery	Full Battery Level
	Battery	Battery Charging
	Warning	Low Battery Warning
	Warning	Request to Clear Data

4. Operations

This section provides the procedures for loading SHARK and using Menu

Detailed Contents are as follows.

- ✓ Setting Up the SHARK
- ✓ Booting Message
- ✓ Menu Control Basis
- ✓ How to use Menu Item & Sub-Menu Item
- ✓ RFID Operation
- ✓ BARCODE Operation

4. Operations

4. 1 Setting Up the SHARK

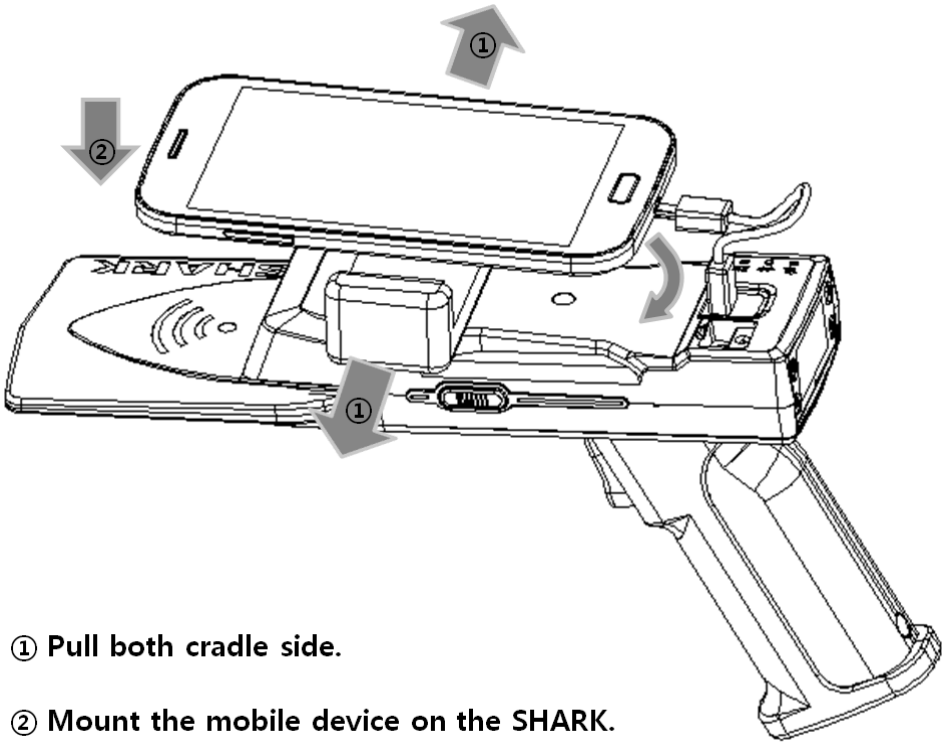
To start using the SHARK for the first time, you should charge the SHARK battery.
Battery Charging LED turns green when Shark has full charged.

4. 1. 1 Battery charging

To charge the SHARK, use the Micro USB cable, cup charger, or cradle for wireless charging.

4. 2 Mounting a Mobile Device on the SHARK

4. 2. 1 To mount mobile device



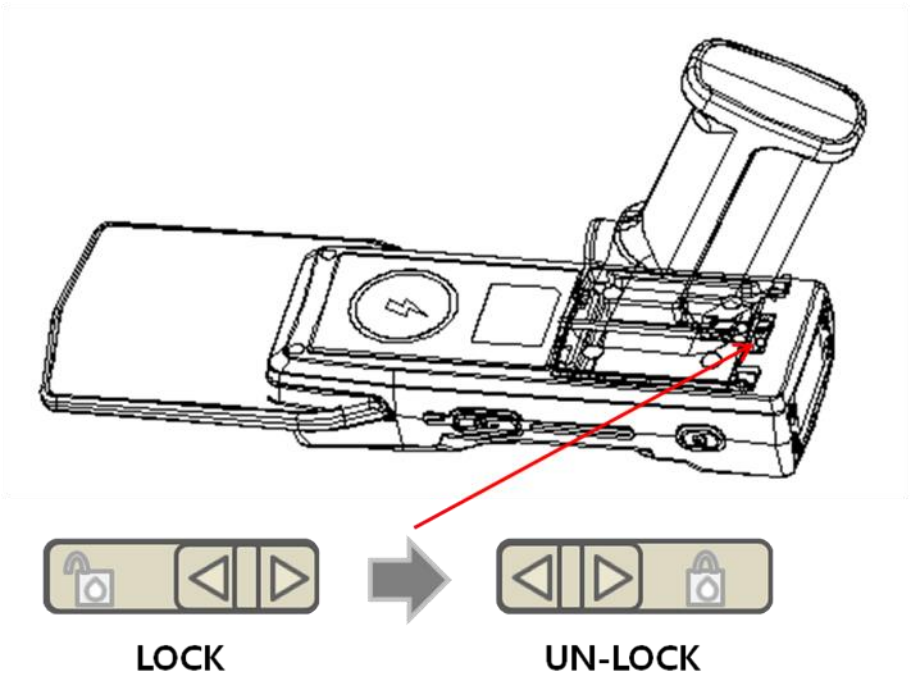
① Pull both cradle side.

② Mount the mobile device on the SHARK.

<Fig 4.2.1> Mounting the mobile device on the SHARK

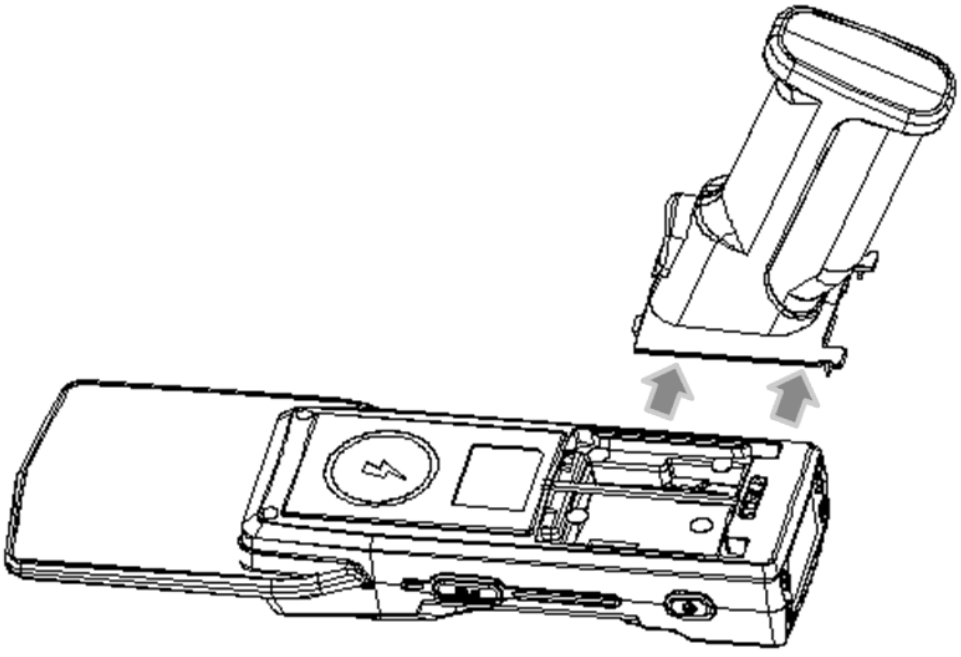
4. 3 Installing the Lanyard

4. 3. 1 To install the optional lanyard



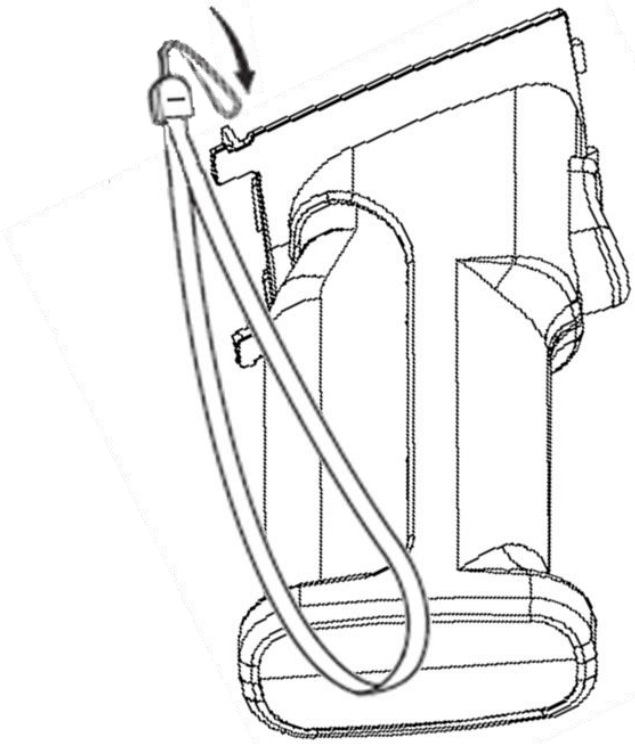
① Slide button to the left (UN-LOCK)

<Fig 4.3.1> Installing the Lanyard - Step 1



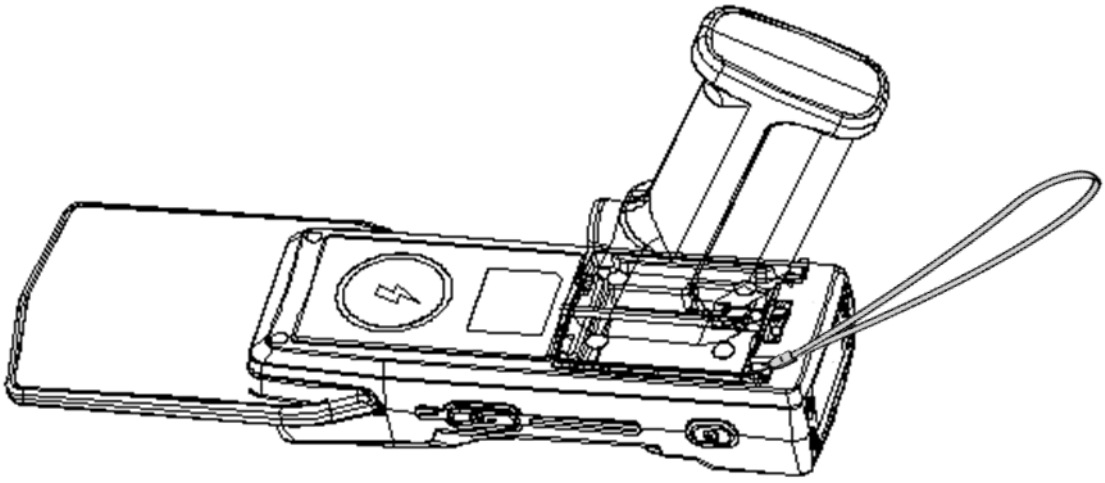
② Slide back and remove SHARK Handle

<Fig 4.3.2> Installing the Lanyard - Step 2



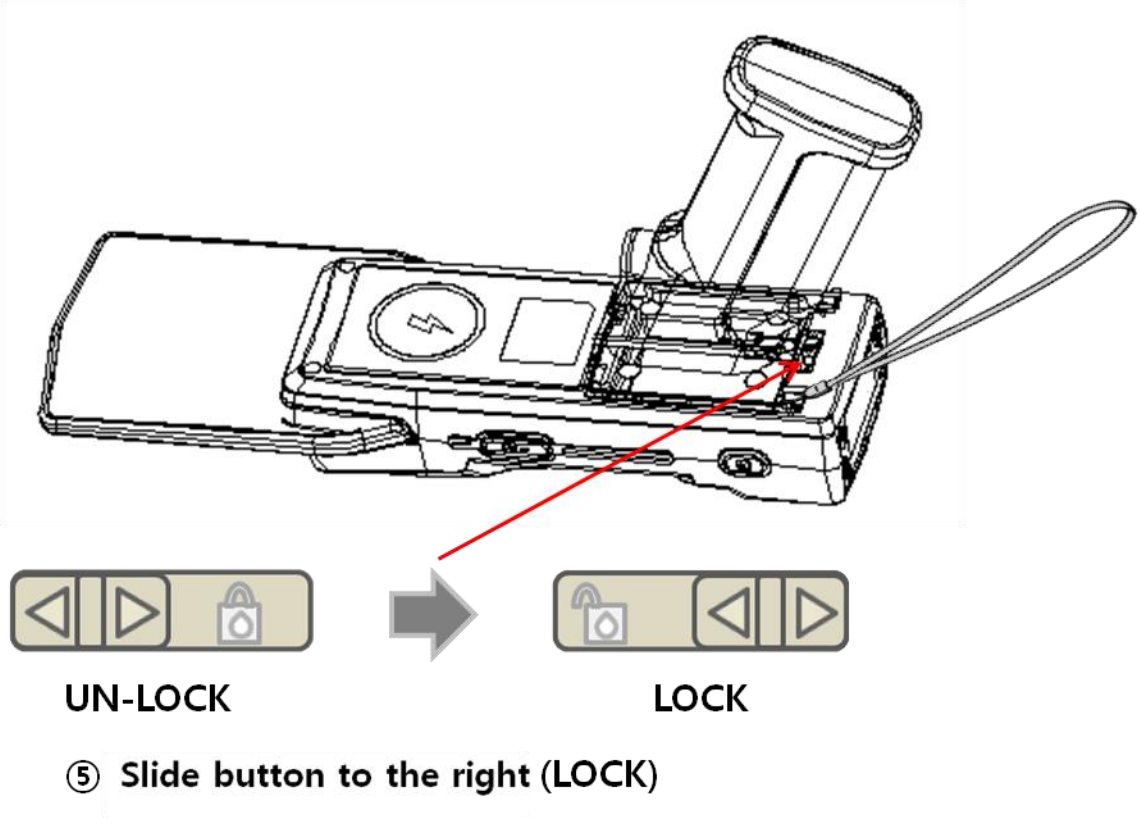
③ Hang loop on the spoing at the top of the SHARK handle

<Fig 4.3.3> Installing the Lanyard - Step 3



④ Put it together again

<Fig 4.3.4> Installing the Lanyard - Step 4



<Fig 4.3.5> Installing the Lanyard - Step 5

4. 4 Booting Message in LCD

4. 4. 1 Battery Check Message

You will find the Battery Check Message when you press the power on button(Long Key). If Battery doesn't have any problem, Battery Check Message will be "Battery Check...[o]"

4 .4. 2 S-RAM Check Message

You will find the S-RAM Check Message when you press the power on button. If S-RAM doesn't have any problem S-RAM Check Message will be "S-RAM Check...[o]"

4. 4. 3 BARCODE Module Check Message

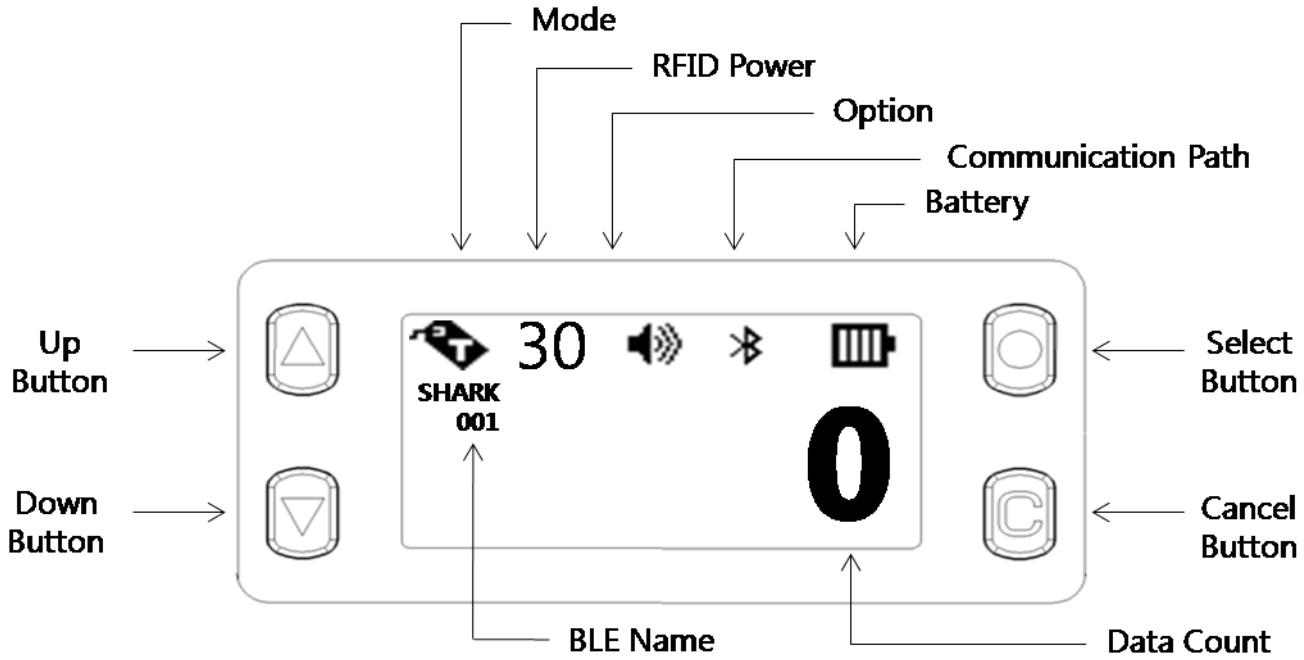
You will find the BARCODE Check Message when you press the power on button. If BARCODE Module doesn't have any problem BARCODE Check Message will be "BARCODE Check...[o]"

4. 4. 4 RFID Module Check Message

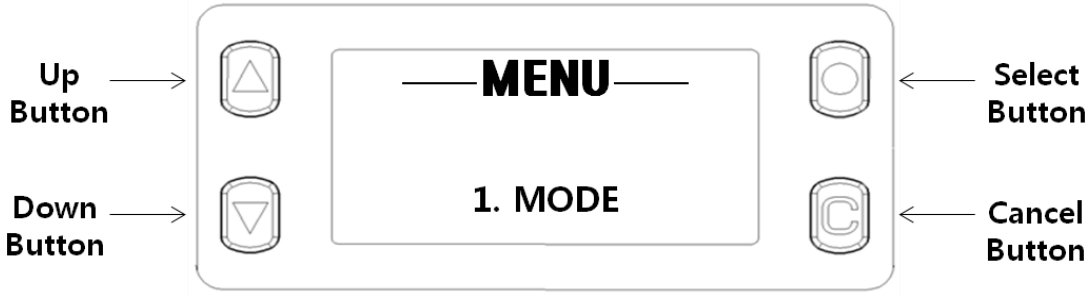
You will find the RFID Check Message when you press the power on button. If RFID Module doesn't have any problem RFID Check Message will be "RFID Check...[o]"

4. 5 Menu Control Basis

You will see following LCD image (Figure 4.5.1.1) in the LCD Screen after Booting Message. You can enter the menu by pressing the **Select** button in non-menu state. You will see following LCD image (Figure 4.5.1.2) in the LCD Screen as soon as you enter the menu. There are 11 menu items (Mode, Option, Data View, Communication Path, F/W View, Barcode Mode, Barcode Report, Barcode Aim, Resolution, RFID Power, RFID Report). You can move through menu by pressing **Up** button or **Down** button in menu state. And then you can choose menu item by pressing **Select** button and Select sub-menu item by pressing **Select** button. If you finish up this process, you can return to Non-menu state by pressing **Cancel** button.



<Fig 4.5.1.1> Non-menu state



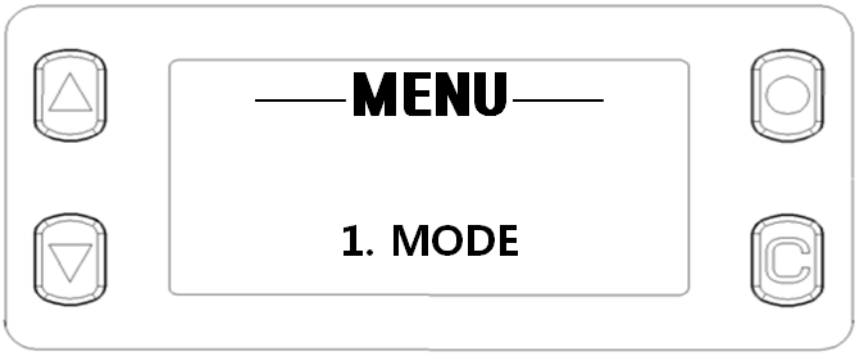
<Fig 4.5.1.2> First image in menu state

4. 6 How to use Menu Item & Sub-Menu Item

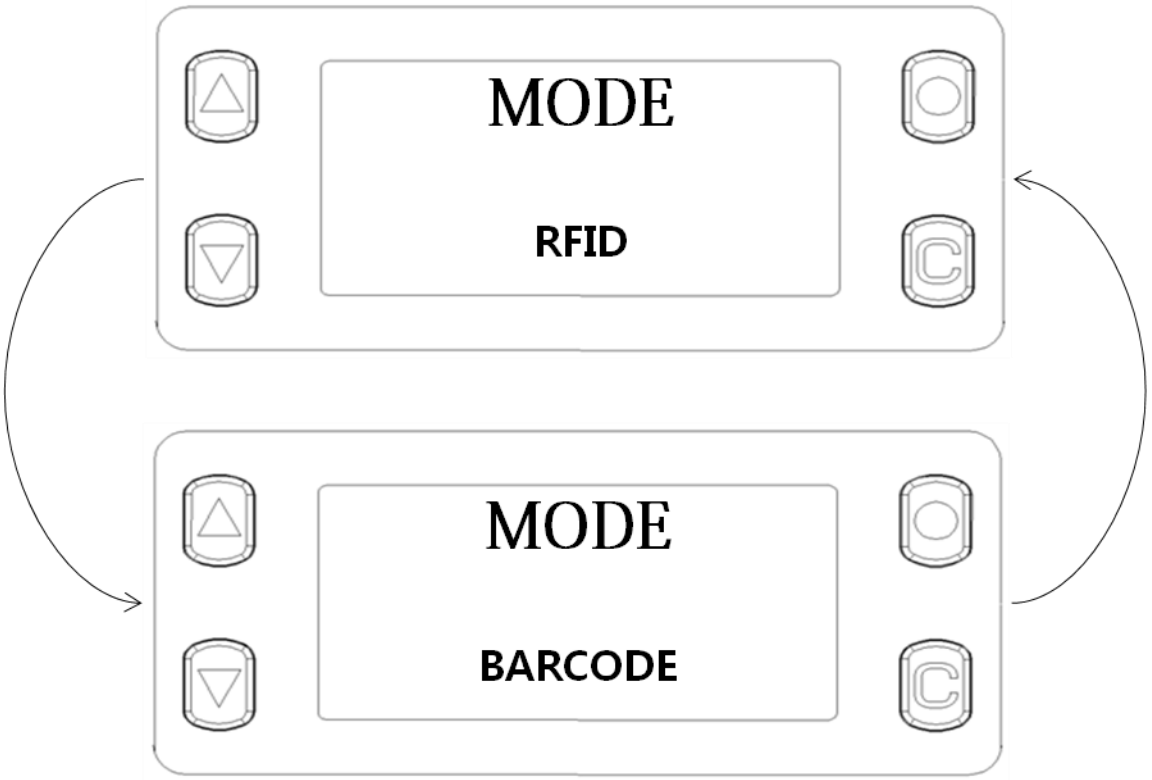
4. 6. 1 Mode Setting

Mode setting procedures are as follows

Step 1) Choose Menu item "MODE" by Pressing **Select** button.



Step 2) Move to RFID or BARCODE by pressing **Up** button or **Down** button. And then apply sub-menu-item by Pressing **Select** button.



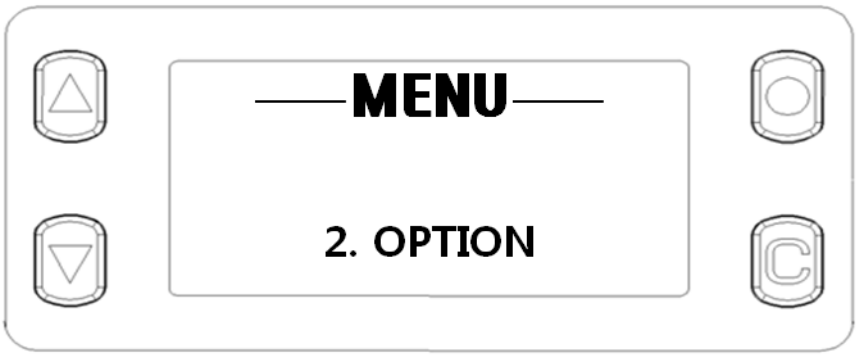
NOTE:

- ✓ **If you don't select sub-menu-item, the Sub-Menu-Item will not be applied to SHARK.**

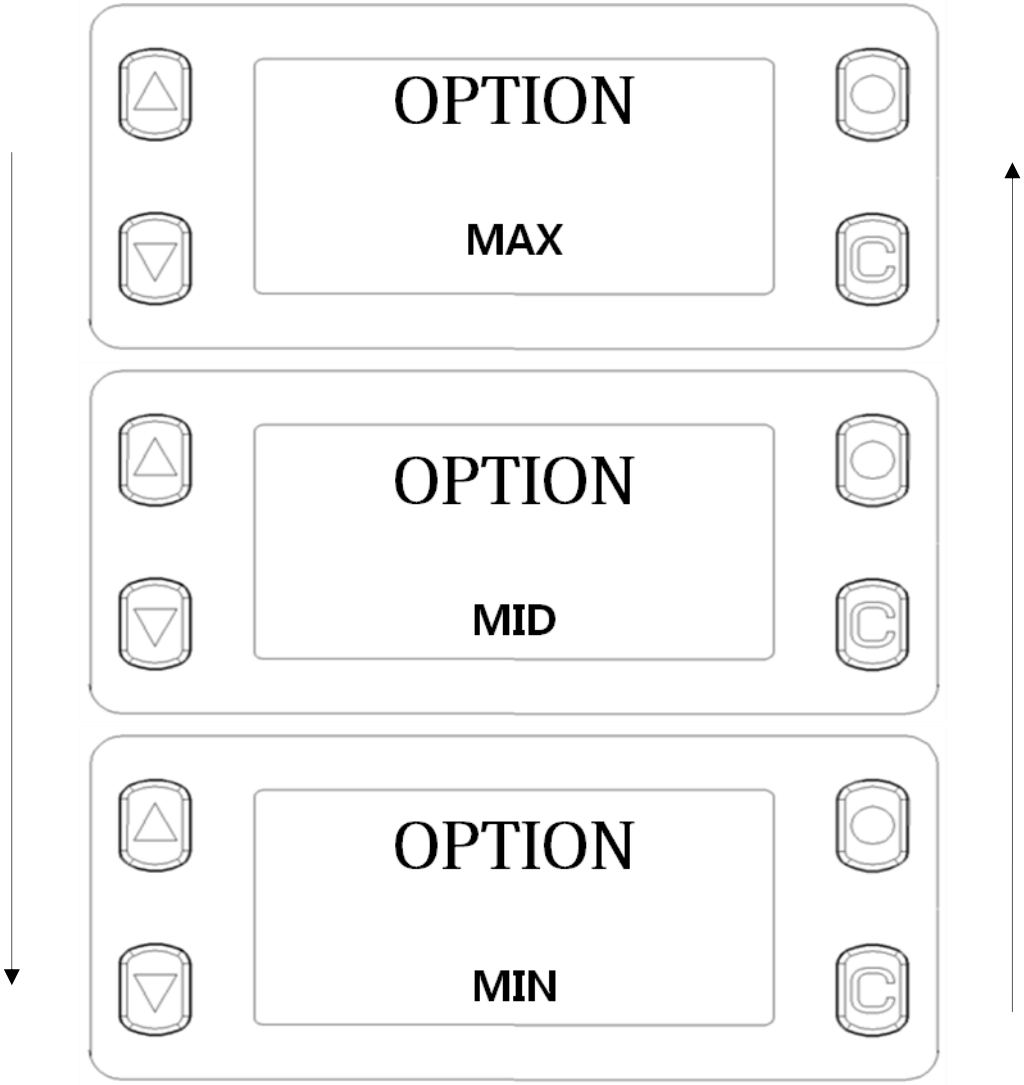
4. 6. 2 Option Setting

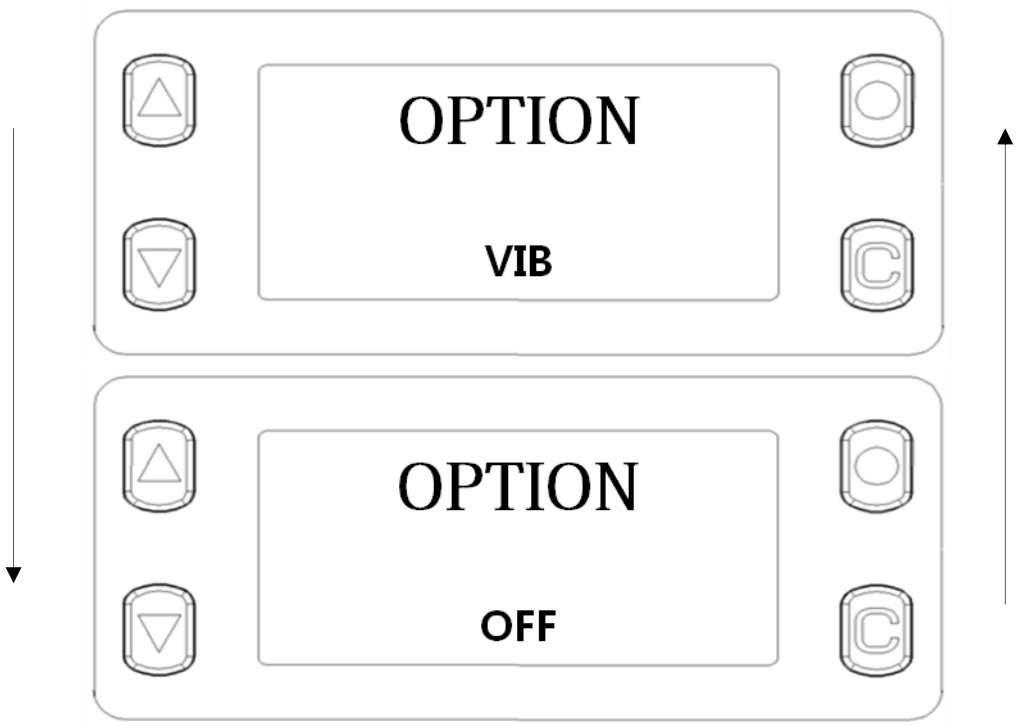
Option setting procedures are as follows.

Step 1) Choose Menu item "OPTION" by Pressing **Select** button.



Step 2) Move to Option parameter(MAX, MID, MIN, VIB, OFF) by pressing **Up** button or **Down** button. And then apply Option by Pressing **Select** button.





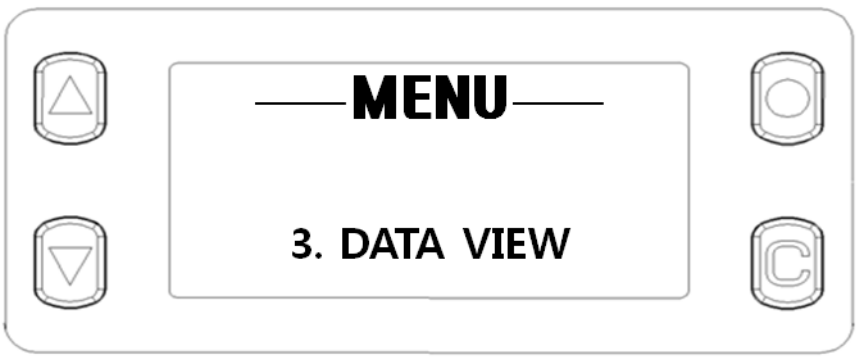
NOTE:

- ✓ **MAX, MID, MIN mean Buzzer volume.**
- ✓ **VIB means vibrator.**

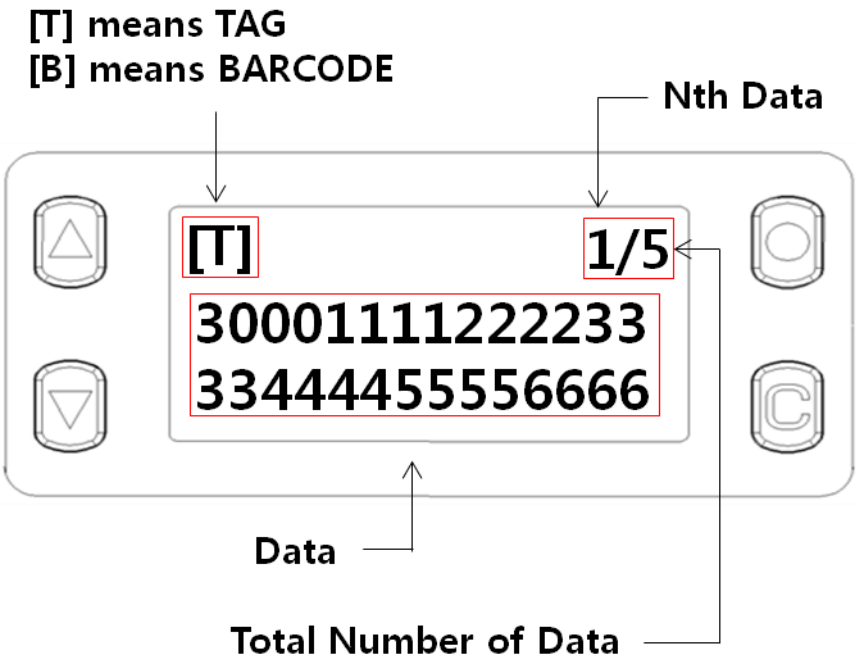
4. 6. 3 How to use “DATA VIEW” Menu Item

The procedures are as follows.

Step 1) Choose Menu item “DATA VIEW” by Pressing **Select** button.



Step 2) Move to Nth data that you want to see by pressing **Up** button or **Down** button.



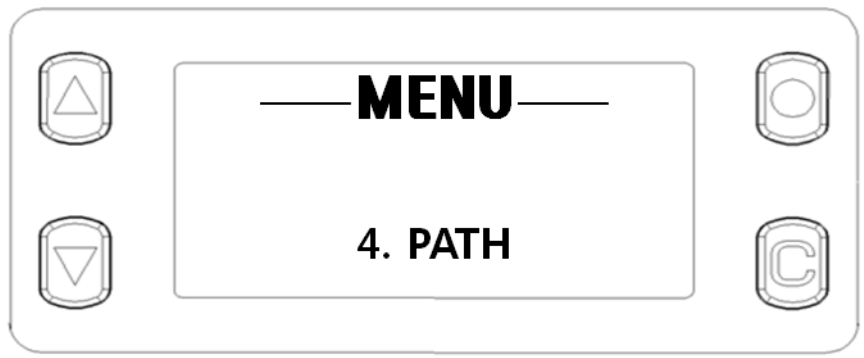
NOTE:

- ✓ **If data length is longer than 28, press Select button. Then you will see remains.**

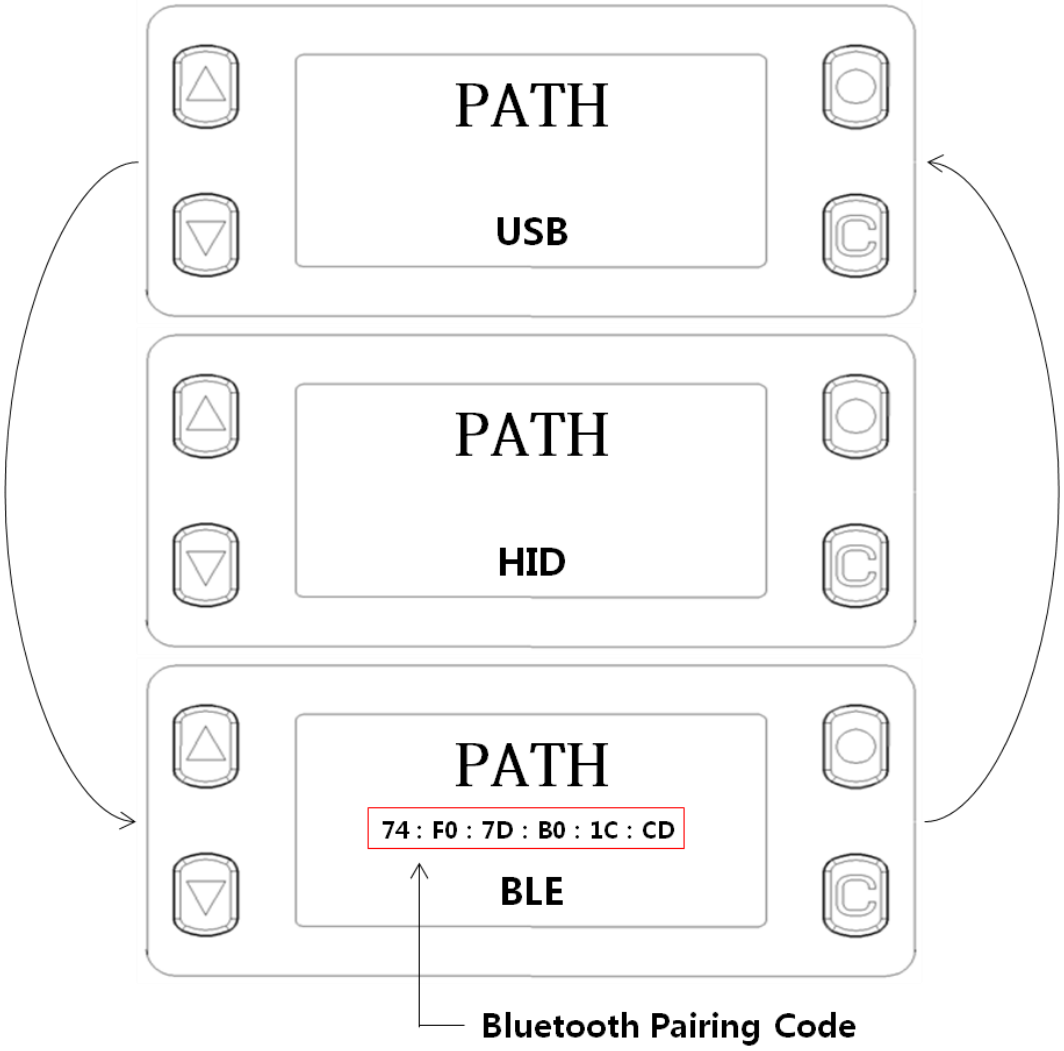
4. 6. 4 Communication Path Setting

The procedures are as follows.

Step 1) Choose Menu item "PATH" by Pressing **Select** button.



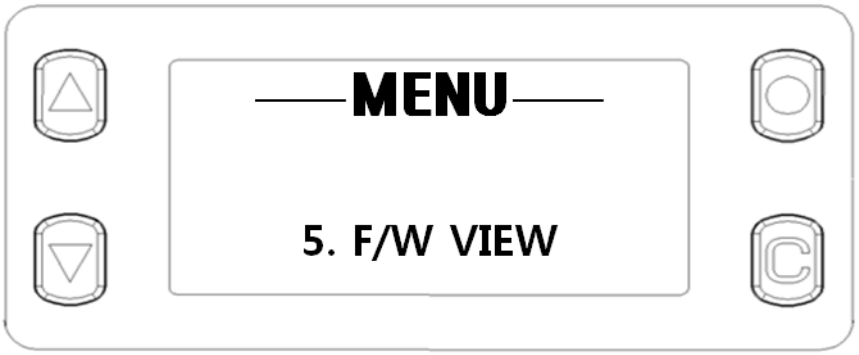
Step 2) Move to Communication Path parameter(USB, HID, BLE) by pressing **Up** button or **Down** button. And then apply Communication Path by Pressing **Select** button.



4. 6. 5 How to use “F/W VIEW” Menu Item

The procedures are as follows.

Step 1) Choose Menu item “F/W VIEW” by Pressing **Select** button.

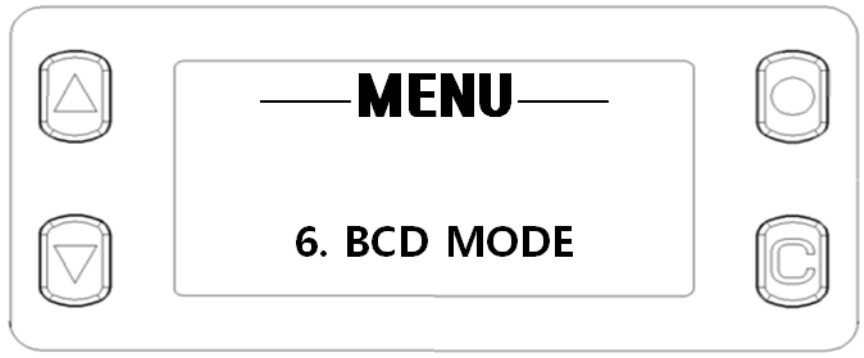


Then you will see SHARK F/W Version

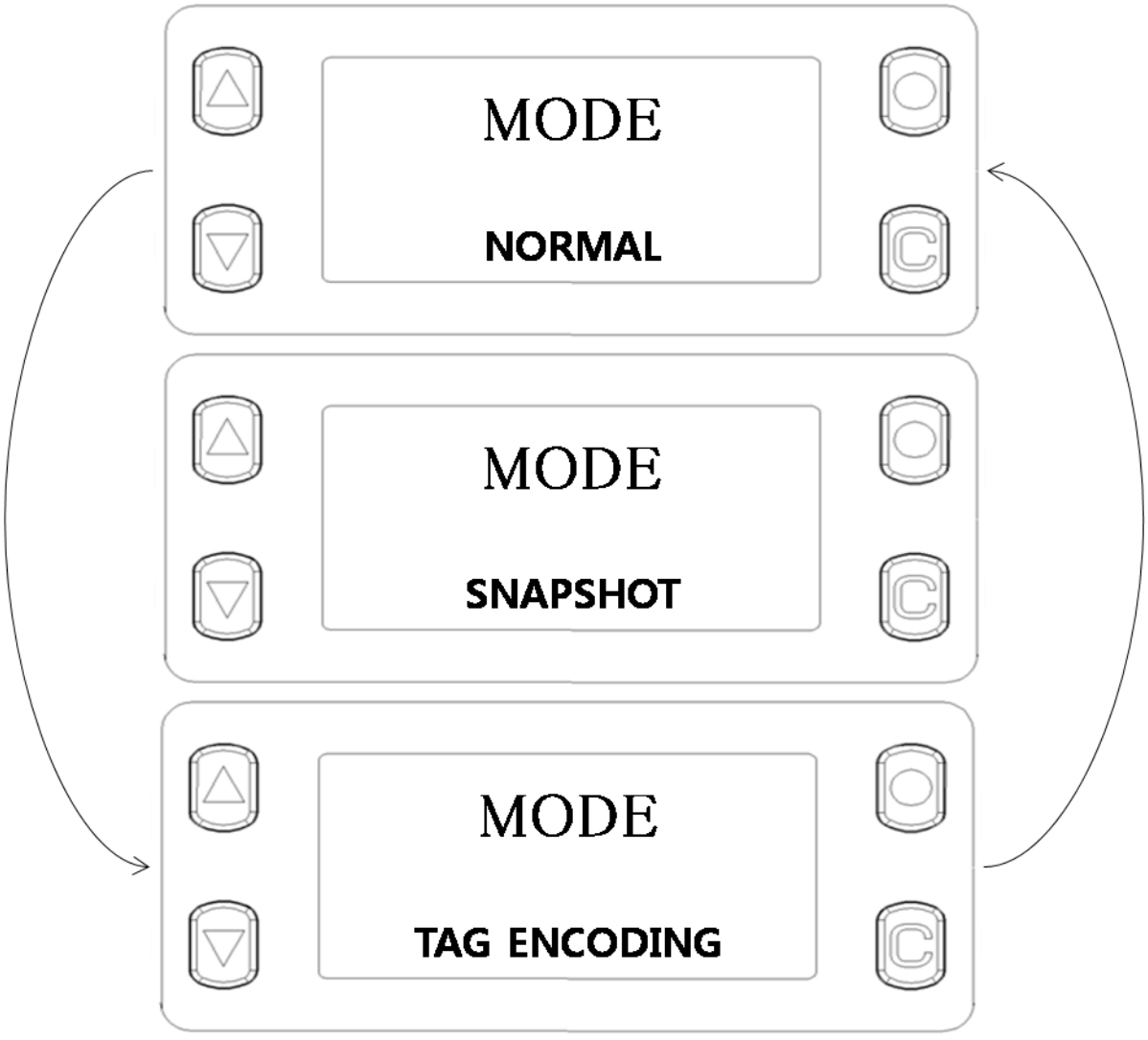
4. 6. 6 Barcode Mode Setting

The procedures are as follows.

Step 1) Choose Menu item "BCD MODE" by Pressing **Select** button.



Step 2) Move to BCD Mode parameter by pressing **Up** button or **Down** button. And then apply sub-menu item by Pressing **Select** button.



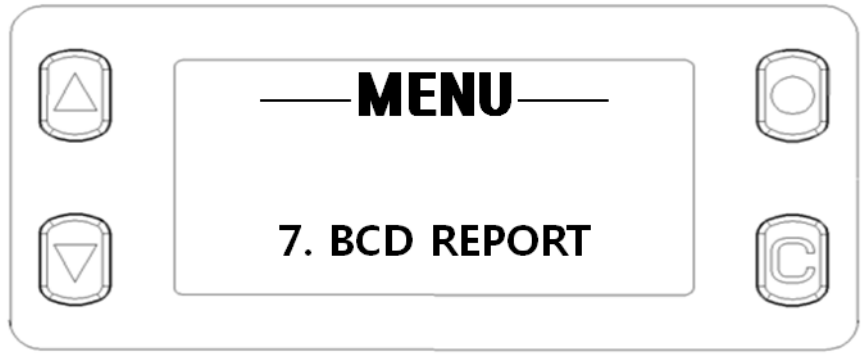
NOTE:

- ✓ **NORMAL means using BARCODE Module to decode BAROCDE.**
- ✓ **SNAPSHOT means using BARCODE Module to take a snapshot.**
- ✓ **TAG ENCODING means writing BARCODE data to Tag's EPC memory.**

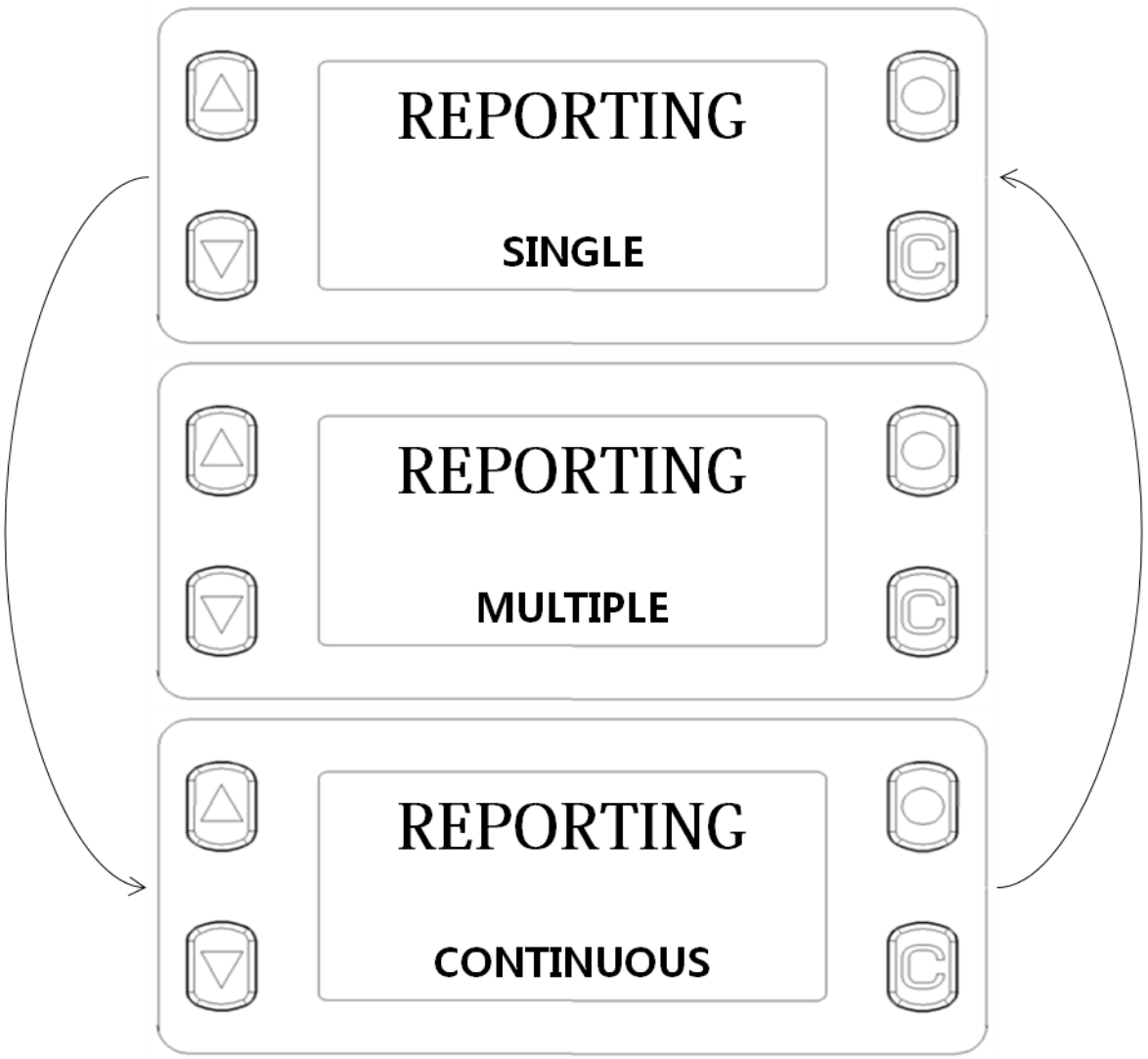
4. 6. 7 Barcode Reporting Setting

The procedures are as follows.

Step 1) Choose Menu item "BCD REPORT" by Pressing **Select** button.



Step 2) Move to Reporting parameter by pressing **Up** button or **Down** button. And then apply sub-menu item by Pressing **Select** button.



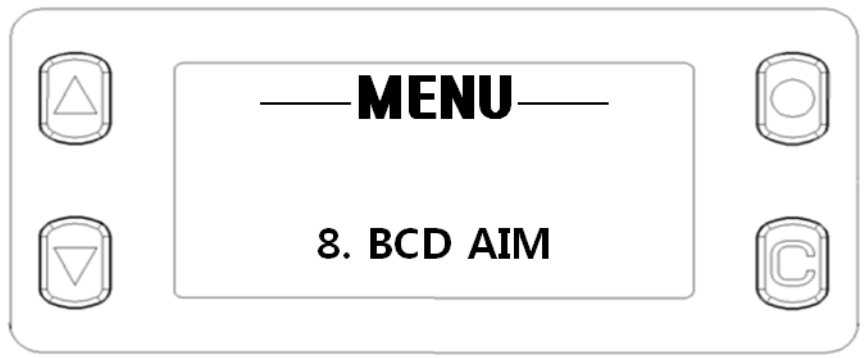
NOTE:

- ✓ **Single Reporting: Once SHARK read Barcode data, SHARK will stop decoding, and Decoding Timeout value is 4 sec.**
- ✓ **Multiple Reporting: Even if SHARK read Barcode data, SHARK will stop decoding immediately. Decoding Timeout value is 4 sec.**
- ✓ **Continuous Reporting: Even if SHARK read Barcode data, SHARK will not stop decoding. And there is no Decoding Timeout value (Only stop command and button pressing can stop decoding)**

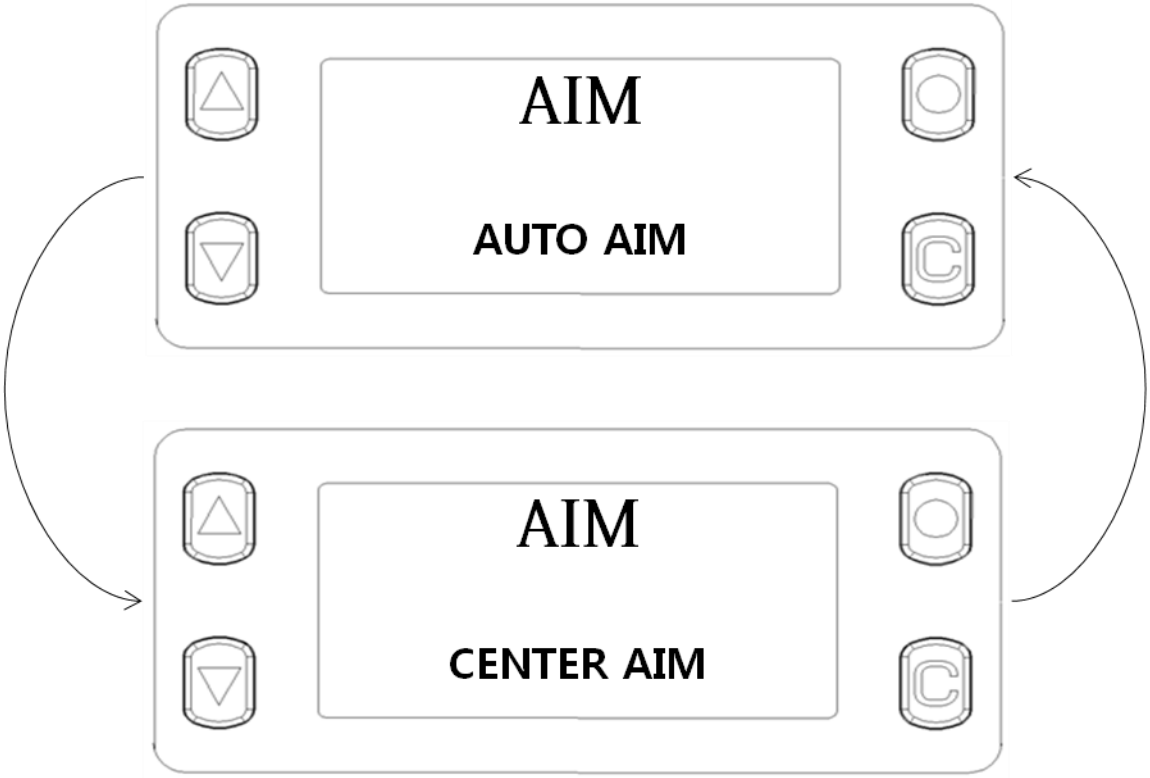
4. 6. 8 Barcode Aim Setting

The procedures are as follows.

Step 1) Choose Menu item "BCD AIM" by Pressing **Select** button.



Step 2) Move to Auto Aim or Center Aim by pressing **Up** button or **Down** button. And then apply sub-menu item by Pressing **Select** button.



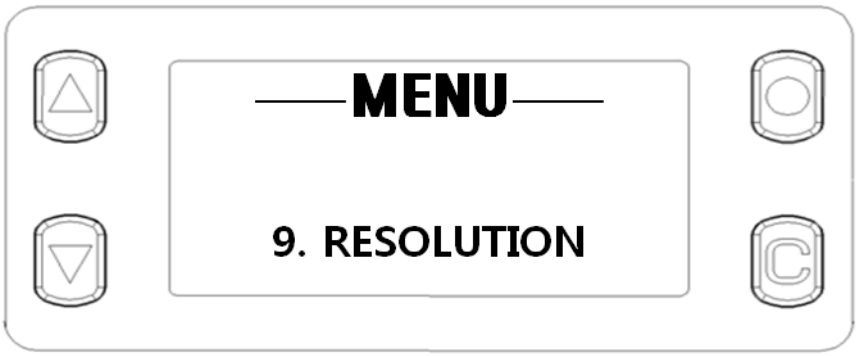
NOTE:

- ✓ **Auto Aim: SHARK decode in the illumination field.**
- ✓ **Center Aim: SHARK decode only center of the illumination field.**

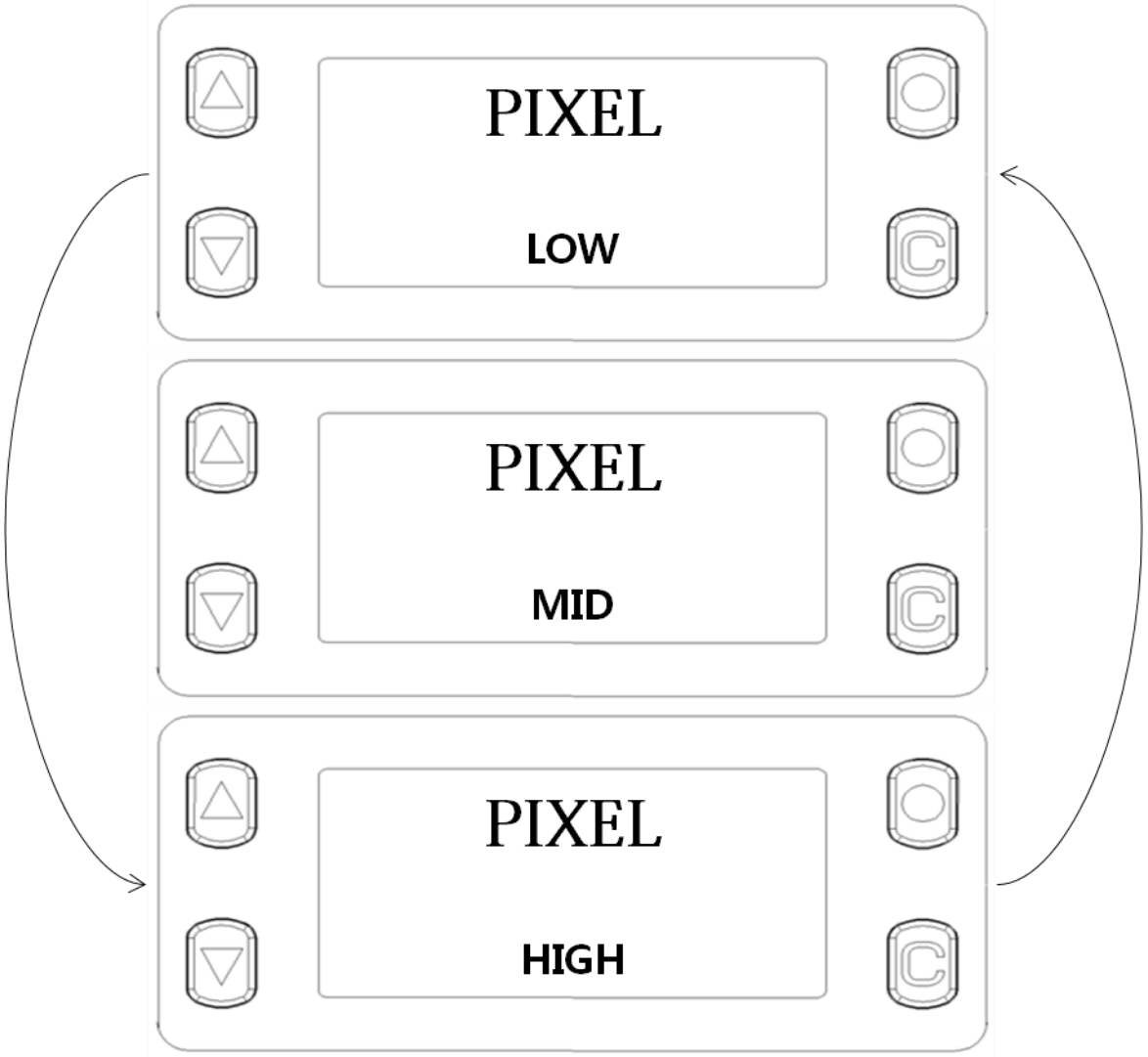
4. 6. 9 Image Resolution Setting

The procedures are as follows.

Step 1) Choose Menu item "RESOLUTION" by Pressing **Select** button.



Step 2) Move to Resolution parameter(LOW, MID, HIGH) by pressing **Up** button or **Down** button. And then apply sub-menu item by Pressing **Select** button.



NOTE:

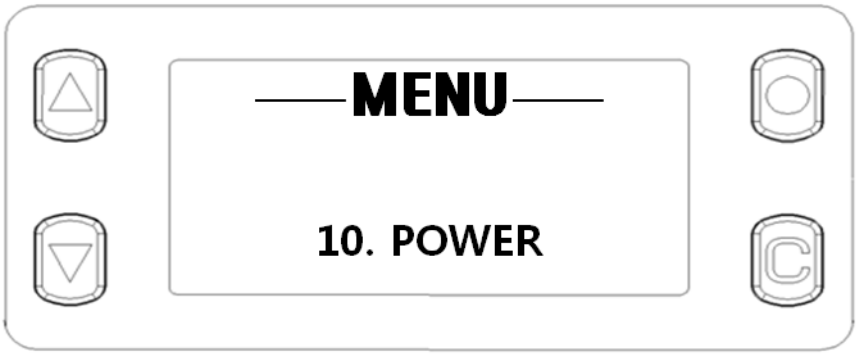
- ✓ **Low: Image Resolution is 320x200 Pixels**
- ✓ **Mid: Image Resolution is 640x400 Pixels**
- ✓ **High: Image Resolution is 1280x800 Pixels**

4. 6. 10 RFID Power Setting

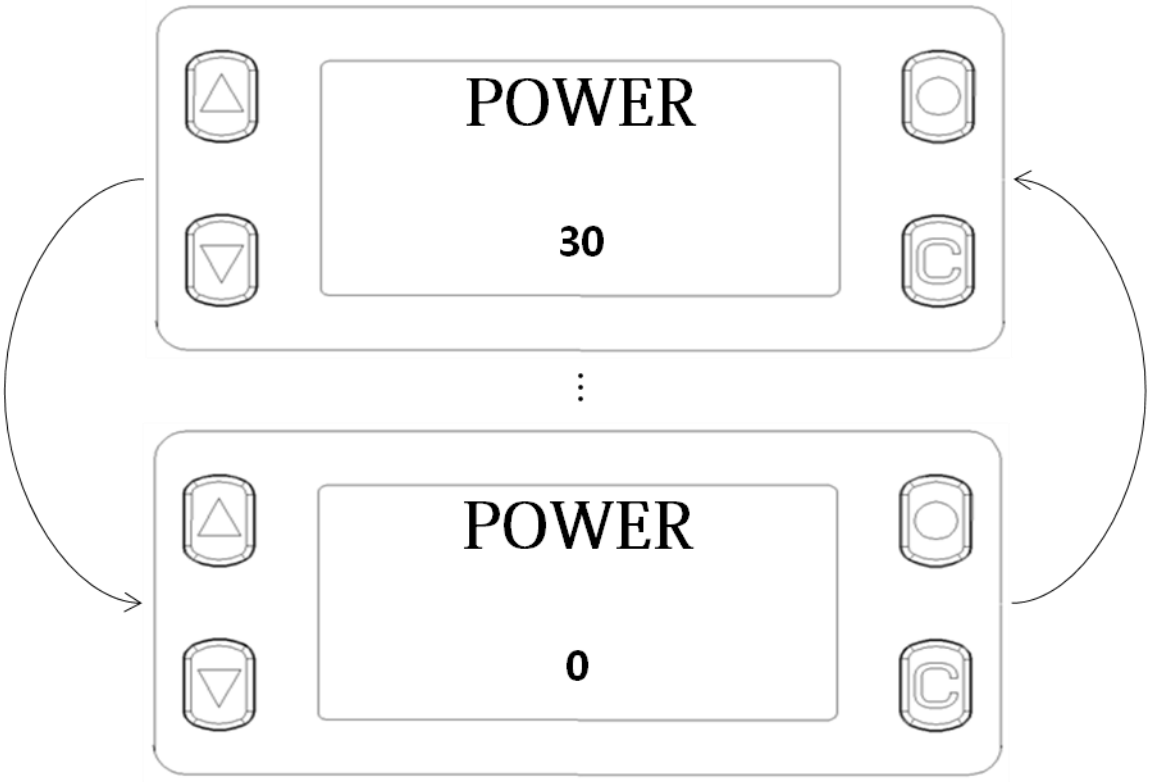
There are 2 ways to set RFID Power. RFID Power setting procedures are as follows.

First Way

Step 1) Choose Menu item "POWER" by Pressing **Select** button.

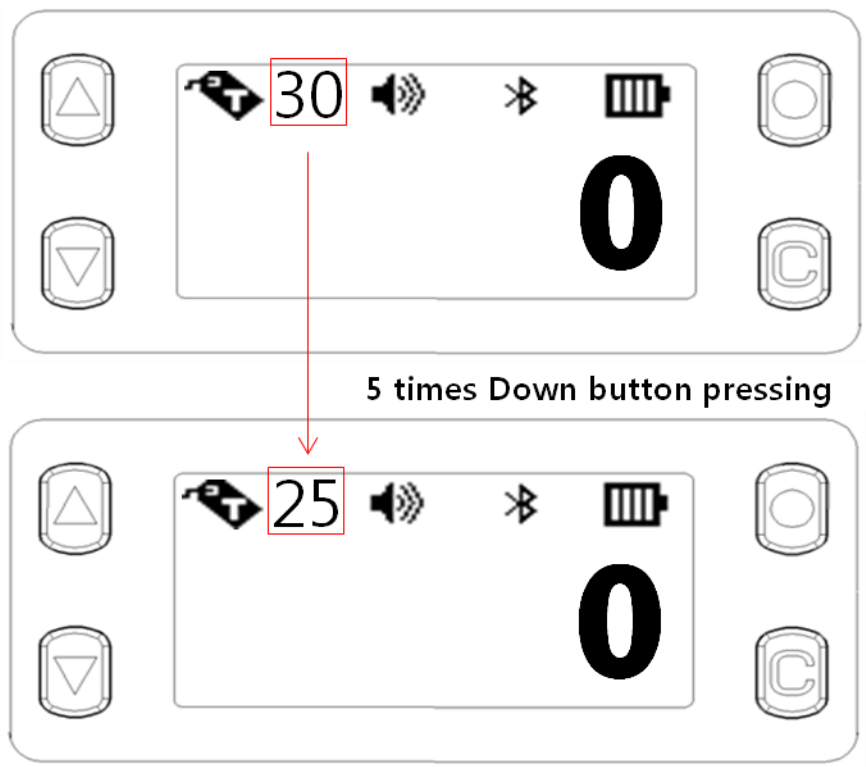


Step 2) Move though RFID Power sub-menu item by pressing **Up** button or **Down** button. And then apply Power value by Pressing **Select** button.



Second Way

Press **Up** button or **Down** button in non-menu state.



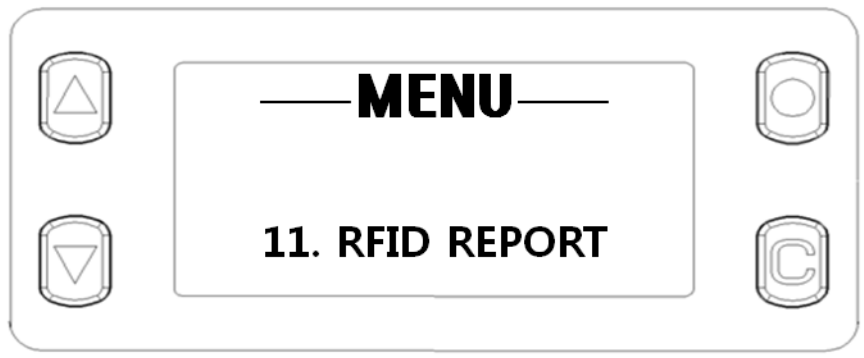
NOTE:

- ✓ **SHARK mode must be RFID mode.**
- ✓ **You can change RFID Power in this way only in RFID Mode**

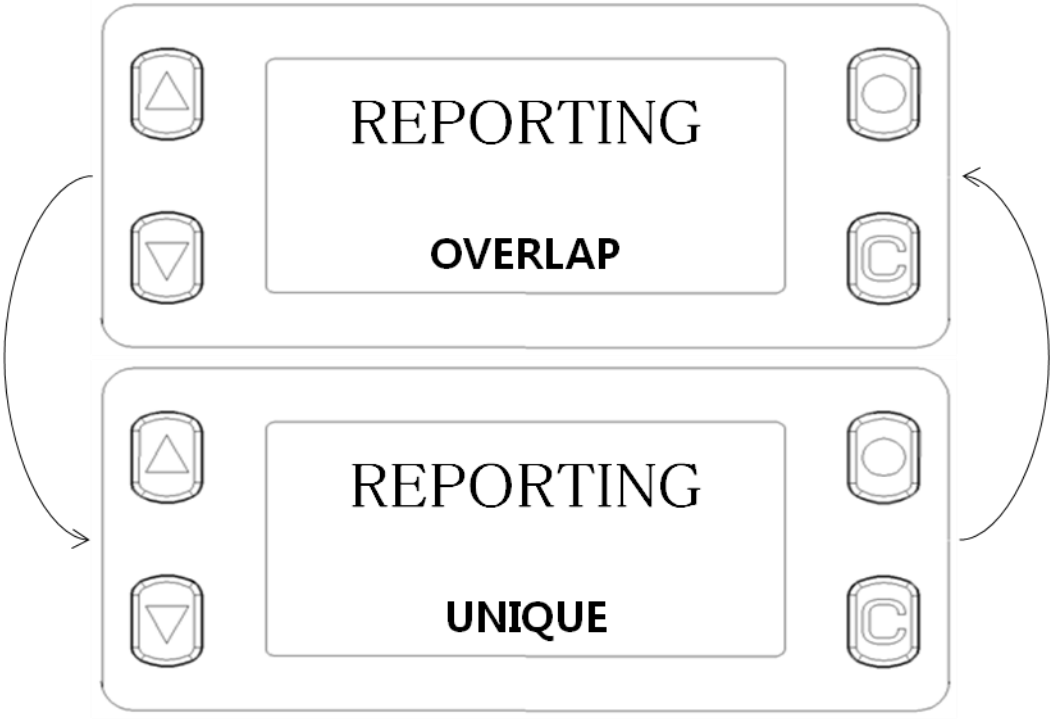
4. 6. 11 RFID Reporting

The procedures are as follows.

Step 1) Choose Menu item "RFID REPORT" by Pressing **Select** button



Step 2) Move to RFID Reporting parameter(OVERLAP, UNIQUE) by pressing **Up** button or **Down** button. And then apply Reporting by Pressing **Select** button.



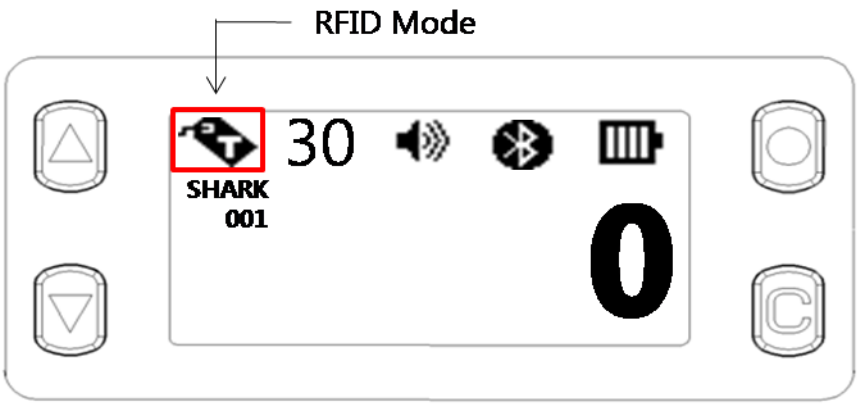
4. 7 RFID Operation

4. 7. 1 Data Reading & Stop

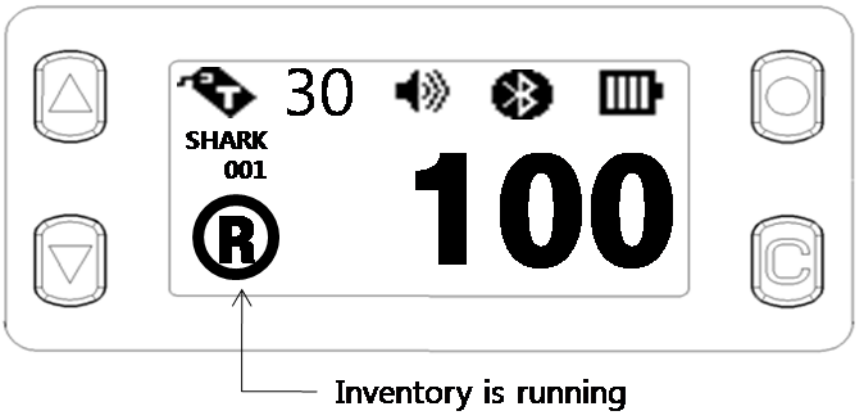
There are 2 ways to read RFID Data, using SHARK.
The procedures are as follows.

Using GUN button

Step 1) Check the SHARK Operation Mode



Step 2) Press **Gun** button and hold, then Data Reading will begin. If you want to stop, release **Gun** button



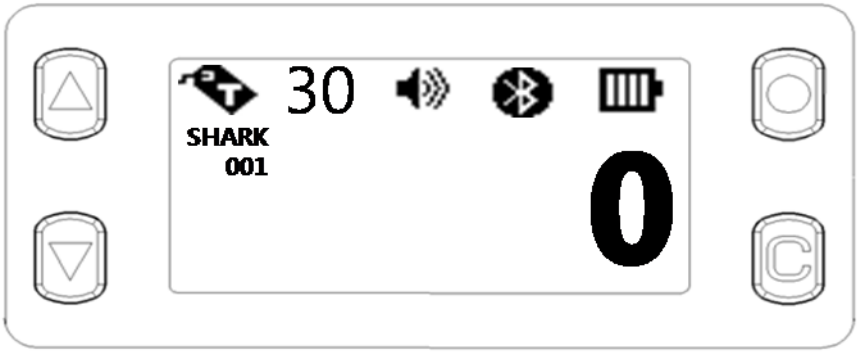
NOTE:

- ✓ **SHARK mode must be RFID mode.**
- ✓ **If RFID Reporting parameter is Unique and if S-RAM has data that is stored in S-RAM, then total data count will not be incremented**

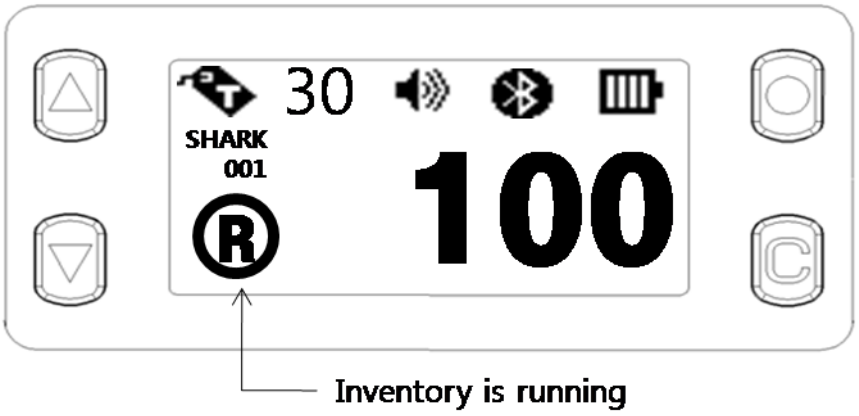
Using RFID Hot Key

Press **RFID Hot Key** in Non-menu state. SHARK always Read Tag Data when you use RFID Hot Key regardless of operation mode. If you want to stop, Press **RFID Hot Key** one more time.
Once you press **RFID Hot Key**, SHARK will not stop Data reading until you press RFID Hot Key one more time. The procedures are as follows.

Step 1)



Step 2)



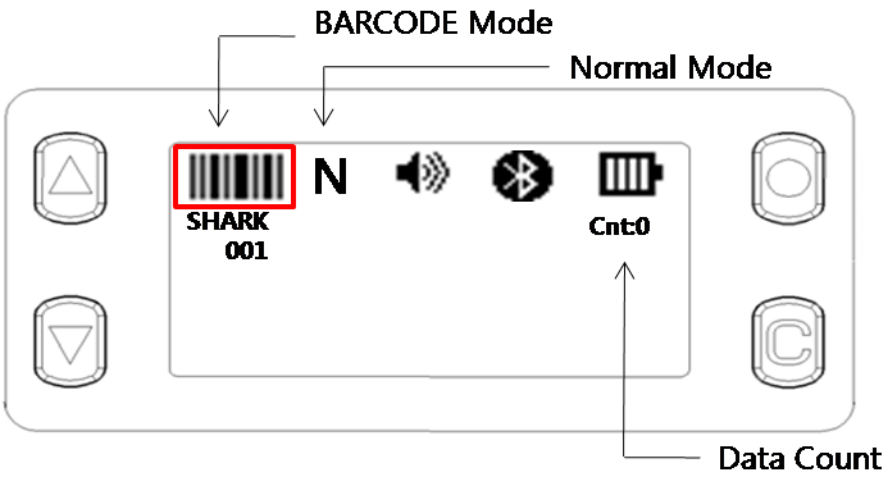
4. 8 BARCODE Operation

4. 8. 1 Data Reading & Stop (BARCODE Reporting Parameter “Single”)

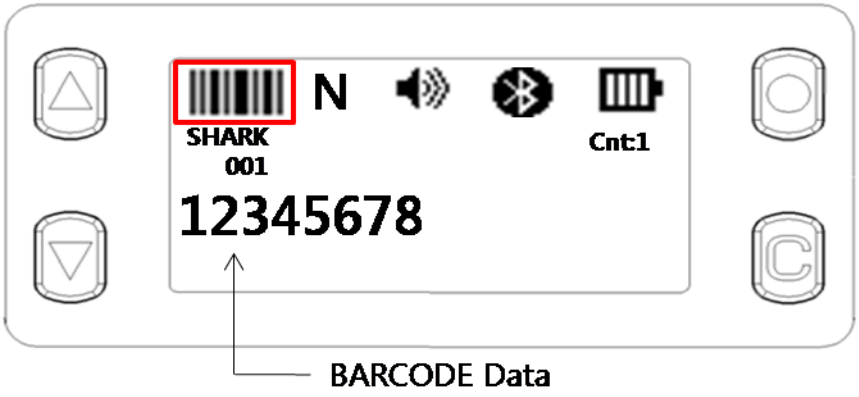
There are 2 ways to read BARCODE data, using SHARK.
The procedures are as follows.

Using GUN button

Step 1) Check the SHARK Operation Mode



Step 2) Press and release **Gun** button. Then BARCODE decoding will begin. BARCODE operation in single reporting has a BAOCDE scan timeout, so if there is no BARCODE in the BARCODE AIM, SHARK will stop BAROCDE decoding automatically. Also if SHARK read BARCODE data, then SHARK will stop decoding immediately in single reporting. (You don’t need to anything to stop operation in single reporting). But if you want to stop decoding immediately, press and release Gun button one more time



Using BARCODE Hot Key (BARCODE Reporting Parameter "Single")

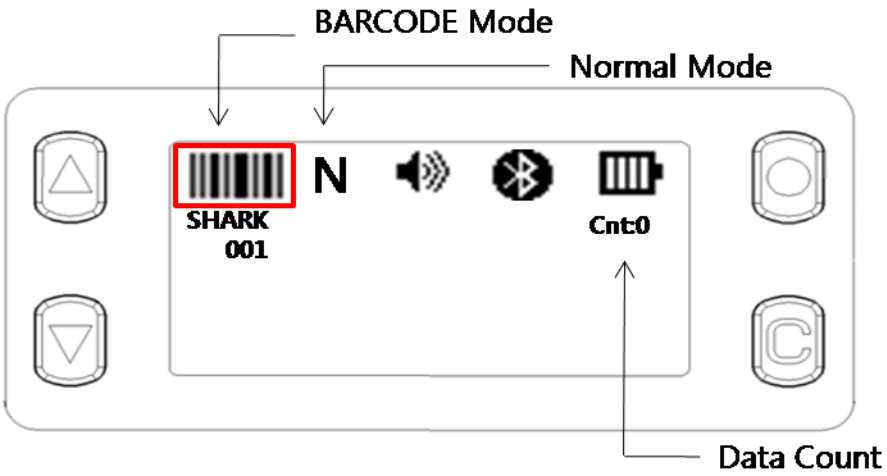
Press **BARCODE Hot Key** in Non-menu state. SHARK always Read BARCODE Data when you use BARCODE Hot Key regardless of Operation Mode. If you want to stop decoding immediately, Press **BARCODE Hot Key** one more time. BARCODE Hot Key operation is completely same with **Gun** button operation

4. 8. 2 Data Reading & Stop (BARCODE Reporting Parameter "Multiple")

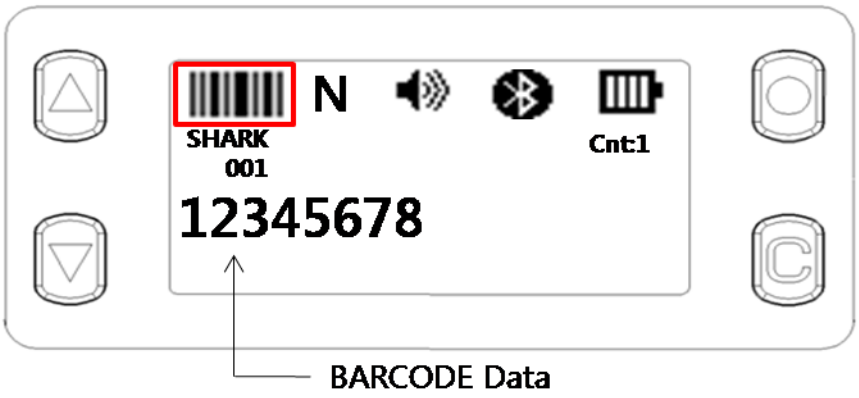
There are 2 ways to read BARCODE data, using SHARK.
The procedures are as follows.

Using GUN button

Step 1) Check the SHARK Operation Mode



Step 2) Press and release **Gun** button. Then BARCODE decoding will begin. BARCODE Operation in multiple reporting has a BAOCDE scan timeout, so if there is no BARCODE in the BARCODE AIM, SHARK will stop BAROCDE decoding automatically. Even if SHARK read the BARCODE data in multiple reporting, SHARK will not stop immediately. (You don't need to anything to stop operation in multiple reporting). But if you want to stop decoding immediately, press and release **Gun** button one more time



Using BARCODE Hot Key (BARCODE Reporting Parameter "Multiple")

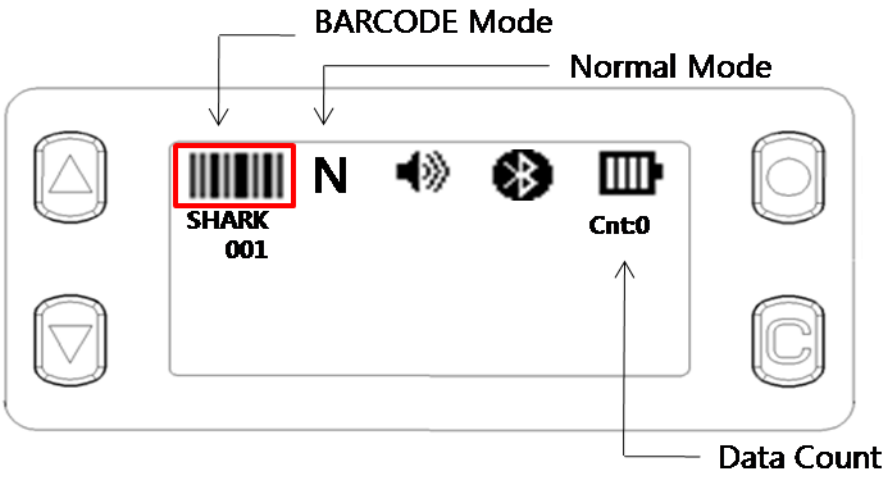
BARCODE Hot Key operation is completely same with **Gun** button operation

4. 8. 3 Data Reading & Stop (BARCODE Reporting Parameter "Continuous")

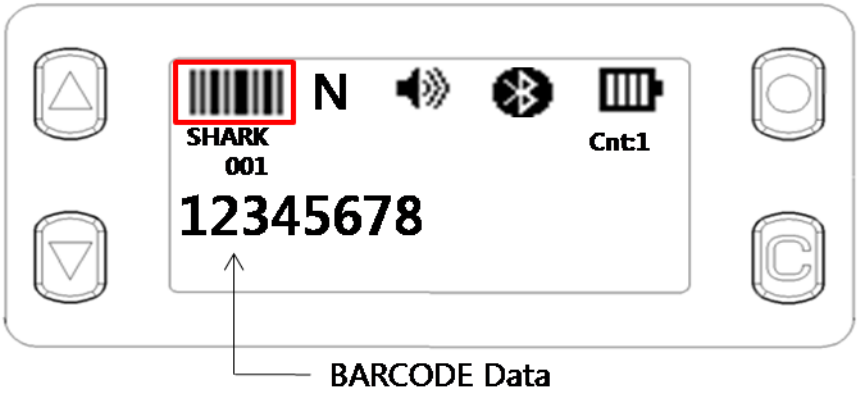
There are 2 ways to read BARCODE data, using SHARK.
The procedures are as follows.

Using GUN button

Step 1) Check the SHARK Operation Mode



Step 2) Press and release **Gun** button. Then BARCODE decoding will begin. And there is no BARCODE scan Timeout. Even if SHARK read BARCODE data, SHARK will not stop decoding. So if you want to stop decoding, press and release **Gun** button one more time



Using BARCODE Hot Key (BARCODE Reporting Parameter "Continuous")

BARCODE Hot Key operation is completely same with **Gun** button operation

ANNEX

This section provides the procedures for updating SHARK Firmware, troubleshooting solutions for potential problems.

Detailed Contents are as follows.

- ✓ To Update SHARK Firm Ware
- ✓ Troubleshooting

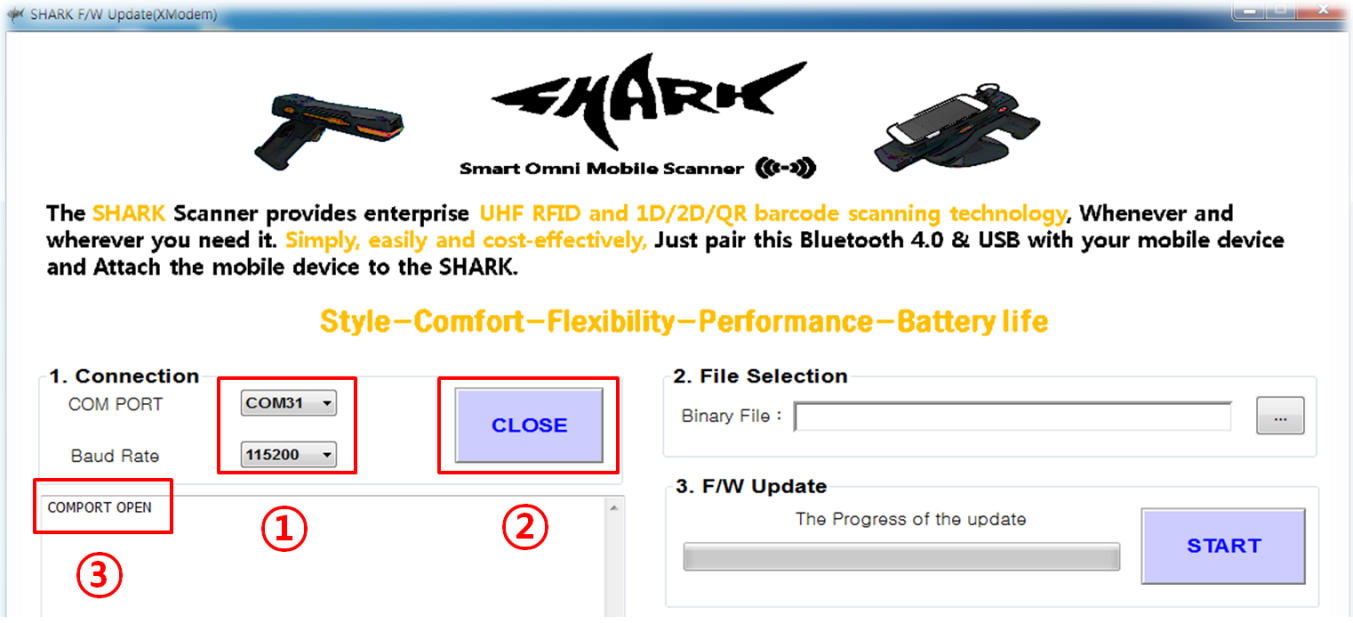
ANNEX

A. To Update SHARK Firmware

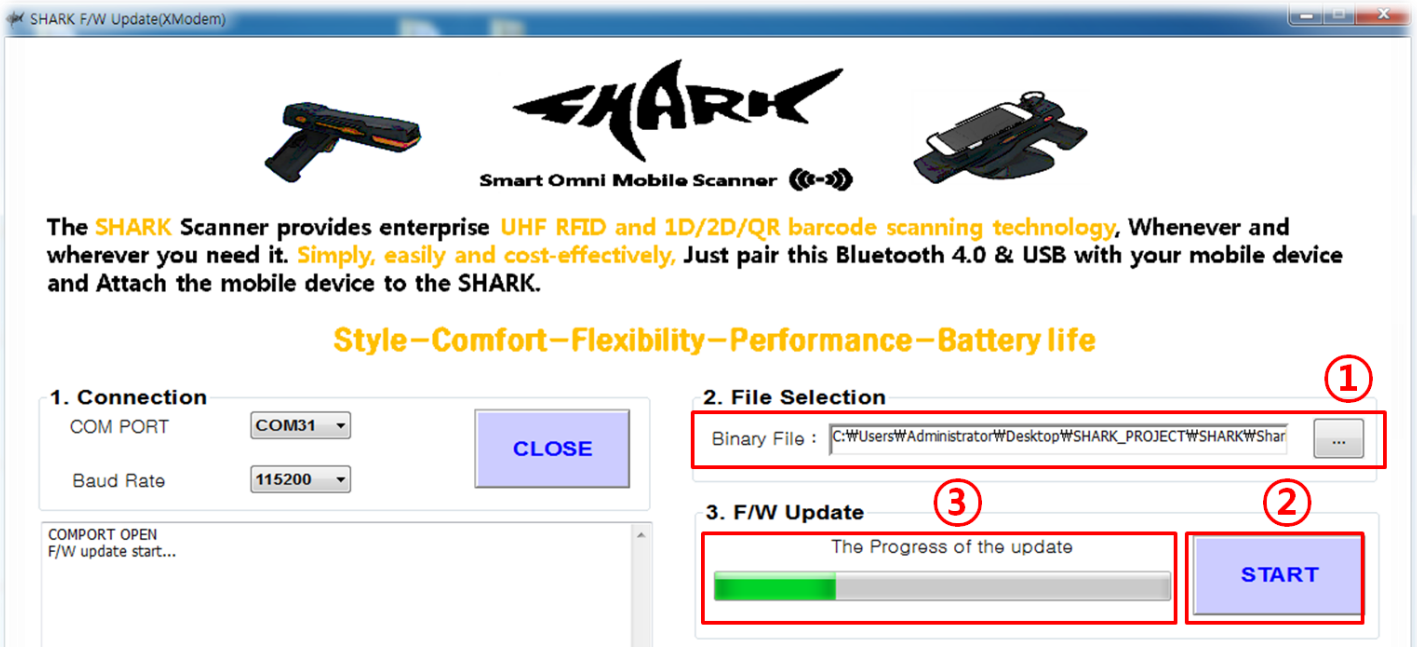
The procedures are as follows.

Step 1) Press **Power On** button(Long Key) and **RFID Hot Key**(Long Key) simultaneously to enter the Firmware Update Mode. Then you will see following LCD image that indicates Firmware Update Mode

Step 2) Connect SHARK and PC using USB cable. And run "SHARK F/W Updater" and check serial port number.(baudrate is 115200) . Open Communication Port.



Step 3) Select SHARK binary file for SHARK Update. And Press START Button



B. Troubleshooting

Always ensure the battery is properly installed.

[TABLE B]

Problem	Possible Causes	Possible Solutions
Barcode Imager comes on, but scanner does not decode the barcode.	Barcode symbol is unreadable.	Check the symbol to ensure it is not defaced. Try scanning test barcode of the same barcode type
SHARK does not fully charge	Attempt to charge on a non-powered USB hub	Connect the SHARK to a powered USB power adapter(5V, 2A)
BLE LED turns off	SHARK is out of range of the BLE host	Move closer to the host and try re-connect.
Unable to pair the SHARK with the mobile device	BLE is off on the mobile device	Turn on Bluetooth on the mobile device
	SHARK communication path is not BLE	Change a SHARK communication path to "BLE"
No RFID data displays in the application on the mobile device when the SHARK starts reading	RFID Reporting parameter is "UNIQUE" and s-ram has the same tag data.	Change a RFID Reporting parameter to "OVERLAP"

UHF RFID Reader
RFID Reader & Tag

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