marson

MR10A7
Mobile NFC Reader

User's Manual

V 2.0

2021 / 03 / 10

- Table of Contents -

1. Introduction

The MR10A7 is a Wireless NFC Reader that uses Bluetooth as the communication interface. It can quickly connect with computers, mobile phones, tablets, etc. through the Human Interface Device (HID), without installing additional device drivers, and can complete an array of operations by integrating its Apps with the Cloud. With a streamlined contemporary styling and a fresh, simple, two colour design, it is ergonomic and easily fits in one hand. With an IP55 dust and water protection rating and a 1.5 meter fall-protection rating, it is also suitable for prolonged use outdoors and in various harsh environments. The MR10A7 has a 1000mAh internal battery and 2MB of internal memory, enough for 10,000 online/offline scans. It can also read from the entire lineup of high frequency RFID NFC chips (ISO14443A, ISO14443B, ISO15693), including wireless key cards, debit cards, and the commonly seen EasyCard.

1-1. Product Features

Light and Easy to Carry
Using Bluetooth as the communication interface, the MR10A7 avoids wiring limitations and enables users to transfer and sync data without changing their work style. Weighing in at just 70g, the product is easily held in one hand and is shaped ergonomically.

Novel Exterior Design
The two-colour exterior design is fresh, simple and clean. The unibody plastic shell is curved, fashionably shaped, and in harmony with mobile phones and tablet usage.

Industry Level Protection
The MR10A7 is an RFID Wireless Reader featuring IP55 dust and water protection rating and a 1.5 meter fall protection rating. It is suitable for prolongs use outdoors or in extremely harsh environments.

High Performance Reading
The MR10A7 can read all RFID high frequency chipsets (ISO1443A, ISO1443B, ISO15693 and NFC), including wireless key cards, debit cards, and the often-seen EasyCard

Excellent Compatibility
Featuring Secure Simple Paring (SSP), the MR10A7 is compatible with the various mobile phones and tablets in the market. The user simply taps on the screen to connect via Bluetooth Human Interface Device (HID) —no pincode required.

Long Battery Life
The 1000mA internal lithium battery powers up to 10,000 scans on a full charge, eliminating the need for frequent battery changes, ensuring employee efficiency.

Human Centred Design
Streamlined, simple button and indicator light design saves users from spending time fumbling. The unique mode indicator light and vibrator communicates read status to the user even in noisy surroundings. A detachable hand strap is also included, so the device may be tied to the waist or hung on the neck, making it easy to reach for anytime use, and hard to lose.

1-2. Package Contents

Each MR10A7 package includes the following items:

1. MR10A7 Wireless NFC Reader
2. One (1) Hand Strap
3. One (1) Micro USB cable

1-3. Product Characteristics and Specifications

1-3-1. NFC Tags Supported by the MR10A7

The MR10A7 can scan the entire series of high frequency NFC tags, including those supporting NFC standards like ISO14443A, ISO14443B, ISO15693, etc. Common NFC tags are listed in Table 1-1*.

Standard	Tag name
ISO14443A	Mifare S-70
	Mifare S-50
	Mifare Ultralight
	Mifare DesFire (MF3)
	SLE66R35 (M-Classic)
ISO14443B	SRIX512
	SRIX4K
ISO15693	I-Code SLI
	Ti2048 (Plus)
	Ti256 (Standard)
	SRF55V10P (EM)
	Advant ATC1024
Others	Topaz 96/ 512
	Felica
	Felica Lite
	NTAG 203/ 215/ 216

Table 1-1: NFC Tags supported by the MR10A7

* The contents of this table are subject to change, without notice, following technical development.

1-3-2. MR10A7 Product Specifications

Performance	
Frequency	13.56MHz
Standard	ISO 15693 ISO 14443A ISO 14443B
Memory	2 MB
Read Mode	Single read
Typical Reading Distance	ISO 14443: 0~65mm
	ISO 15693: 0~80mm
Physical Characteristics	
Dimension	W42.5×L102×H21.5 mm
Weight	70g
Color	White
Material	PC
Cable	1.5 M (Micro USB cable)
Trigger	Scan Button, Function Button
Indicator	Buzzer, LED, Vibrator
Power	
Operation Voltage	3.7 VDC
Working Current	< 250mA
Standby Current	< 75mA
Battery	3.7V, 1000mAh, Lithium Battery
Number of Scan (per full charge)	10,000 scans (1 scan/ 5 secs, Bluetooth connected)
Connectivity	
Radio	Bluetooth 2.1 + EDR (Class2)
Range	10m (line of sight)
Interface/ Profile	BT HID BT SPP USB HID USB VCP Memory
User Environment	
Operating Temperature	-10~55˚C
Storage Temperature	-20~65˚C
Humidity	0%~95%RH (Non-condensing)
Drop Durability	1.5M
Sealing	IP55
Regulatory	
ESD	Functional after 4KV contact, 8KV air discharge
EMC/RF	FCC Part 15B Class B, Part 15C, CE EN55022/24/32, EN301489-1-17, EN300328 V1.9.1 TELEC
Safety	EN/IEC60950-1
Environmental	WEEE, RoHS 2.0

Table 1-2: MR10A7 Specifications

1-3-3. MR10A7 Indicator Lights and Sounds

MR10A7's LED indicators use three colours: blue, green and red, as per Figure 1-1. In combination with the buzzer they indicate different conditions, in Configuration Mode.

Status	Blue LED	Green LED	Red LED	Beeper
Power up			lits 1 second	1 long beep
Good Read		lits 1 second		1 short beep*
Bluetooth Disconnected (Discoverable)	flashing			
Bluetooth Connected		2 flashes		2 short beeps
Deletes Pairing Record				2 short beeps
Data Transfer Failure (Offline)		lits 1 second		3 short beeps
Data Storage Failure (Memory Full)		1 flash		3 short beeps
Enters Configuration Mode		stays on		2 short beeps
Exits Configuration Mode				2 short beeps
Low Power			flashing	
Charging			stays on	

Table 1-3: MR10A7's LED Indicators and Beeper

*Please refer to **5-9-2. Beep Time** for beep length configuration.

1-4. Operating Instructions

1-4-1. Power Up

Press the Trigger Button for 2 seconds without releasing, as per Figure 1-1. The unit will emit one (1) long beep and light the LED red. When the sound then stops and the light goes off, the reader successfully powers up.

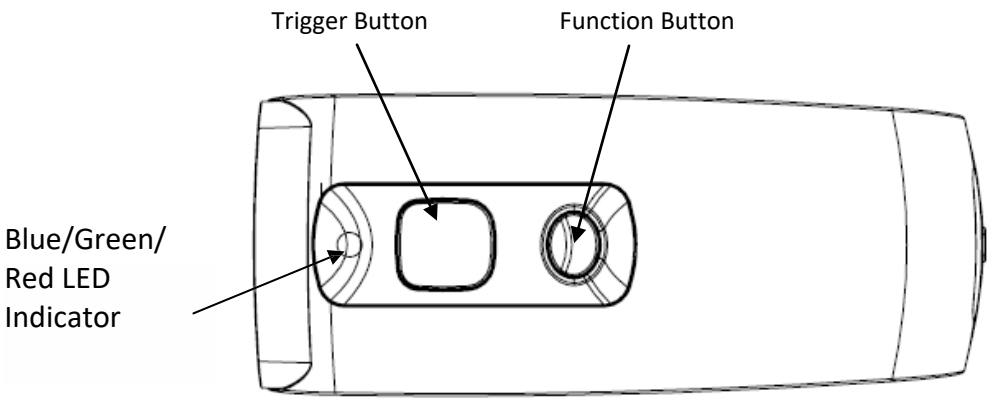


Figure 1-1: Trigger Button and Function Button positions

1-4-2. Shut Down

Method 1:

By default, the unit shuts down automatically after 5 minutes of inactivity. To adjust the auto power-off timeout, please refer to Chapter **5-8. Enter Sleep Mode / Timer**

Method 2:

Using a needle or paper clip, press the Reset Button located at the bottom of the MR10A7 once, as per Figure 1-2. This will force a shut down.

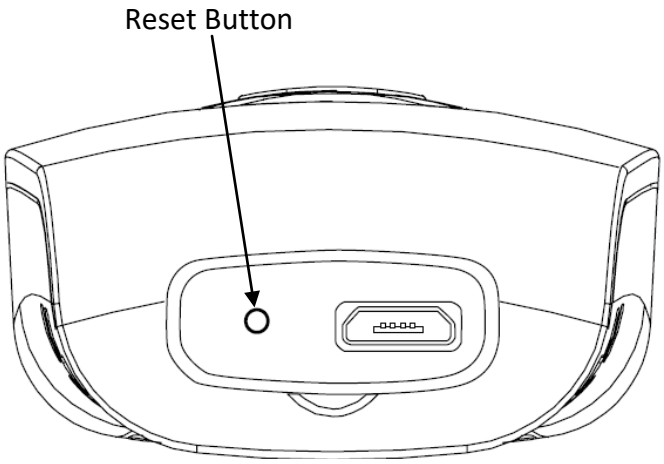


Figure 1-2: Reset Button position

1-4-3. Connecting to a PC/ Notebook

Step 1:

Press and hold the Trigger Button for 2 seconds to power up the unit, after which the blue indicator LED will flash continuously. (If the blue LED does not flash, it means the unit is not currently in Bluetooth Mode. Please refer to Section **5-3. Communication Interface**, and change the Communication Interface to BT-HID.)

Step 2:

Enter the PC/Notebook's Bluetooth application, as per Figure 1-3, and click *Add a Device.*

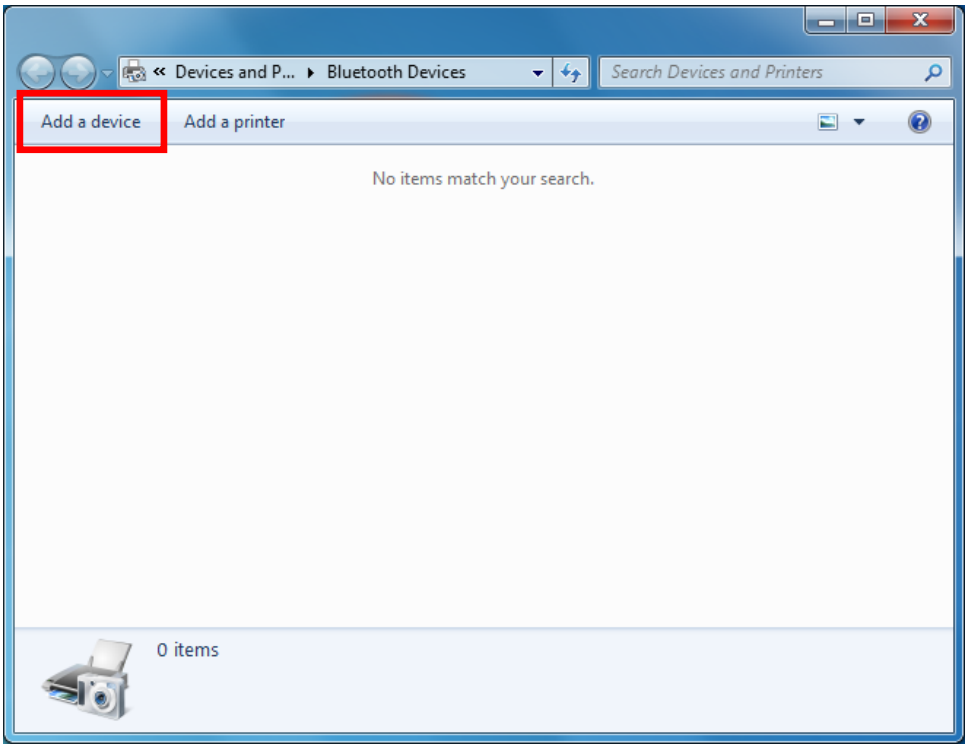


Figure 1-3: PC/NB Bluetooth application Main Window

Step 3:

In the Add a device window, double click **HF RFID Reader** to connect, as per Figure 1-4.

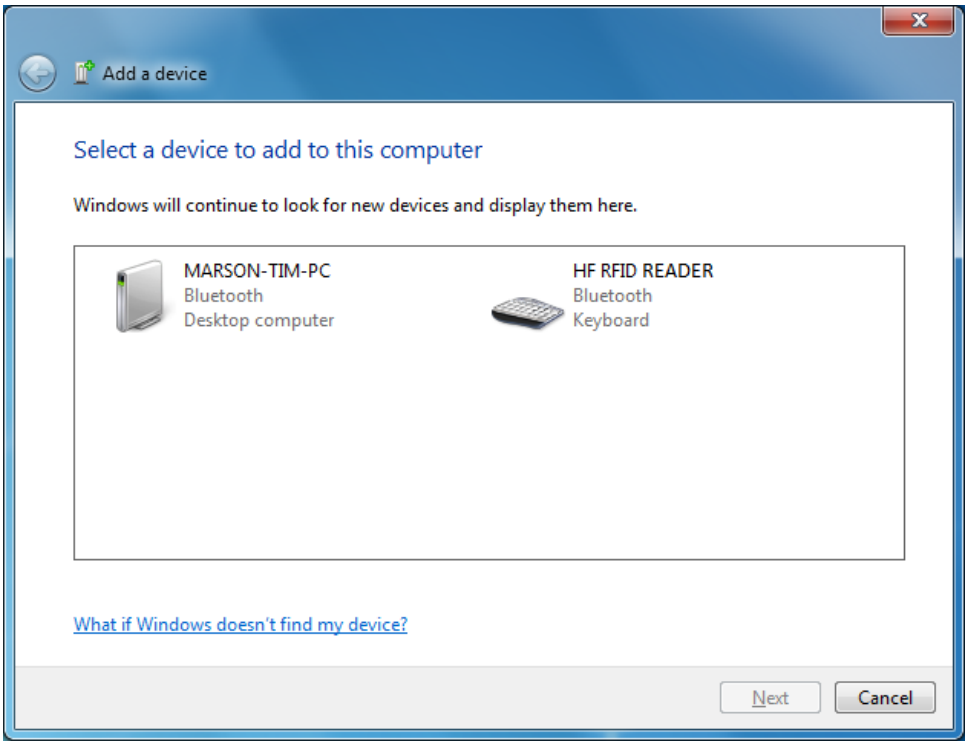


Figure 1-4: Select Bluetooth Device window

Step 4:

When successfully connected the MR10A7 will emit two short beeps, and the blue LED indicator will shut off. The PC/NB will show a message window like in Figure 1-5, and after clicking *Close* the PC/NB Bluetooth application Main Window will show **HF RFID Reader** as a connected device, as per Figure 1-6.

Figure 1-5: Connection Successful message window

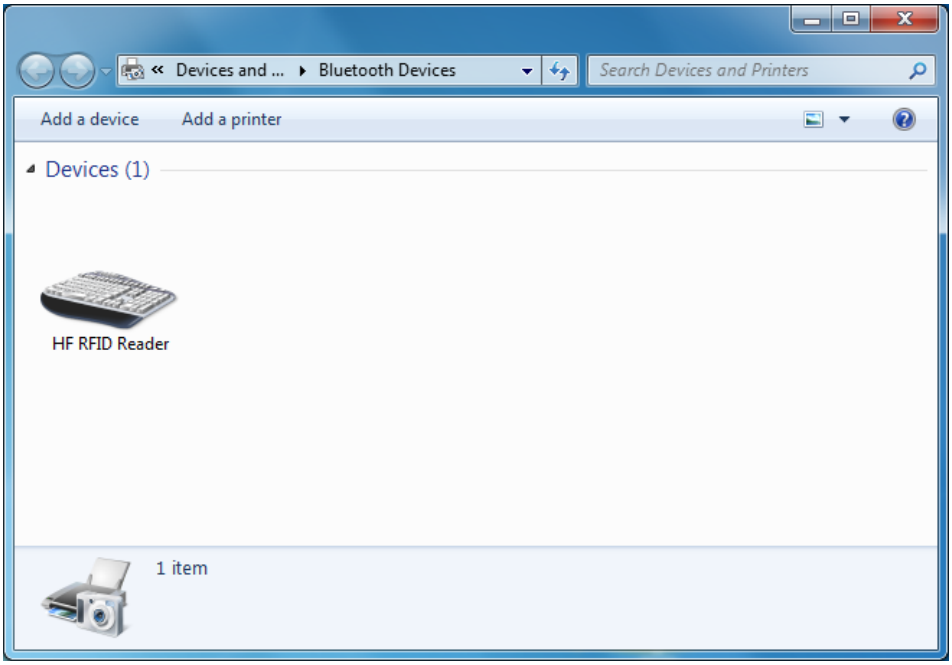


Figure 1-6: PC/NB Bluetooth application Main Window

Step 5:

Launch a program that can accept HID keyboard input, such as Notepad. NFC Tag data read by the MR10A7 will output to that program

1-4-4. Connecting to an Apple iOS Device

Step 1:
Press and hold the Trigger Button for 2 seconds to boot the unit, after which the blue LED indicator will flash continuously. (If the blue LED indicator does not flash, it means the unit is not currently in Bluetooth Mode for its Communication Interface. Please refer to Section **5-3. Communication Interface**, and change the Communication Interface to **BT-HID**.)

Step 2:

On the Apple iOS device, go to **Settings > Bluetooth**, and turn on Bluetooth, as per Figure 1-8.

Figure 1-8: Bluetooth Settings screen

Step 3:
In the discoverable devices list, select **HF RFID Reader**, as per Figure 1-9

Figure 1-9: Select HF RFID Reader from the discoverable devices list.

Step 4:
Upon establishing connection the MR10A7 will emit two short beeps and turn off its blue LED indicator. Also, the HF RFID Reader will list as "Connected" in the Apple iOS device's Bluetooth devices list, as per Figure 1-10.

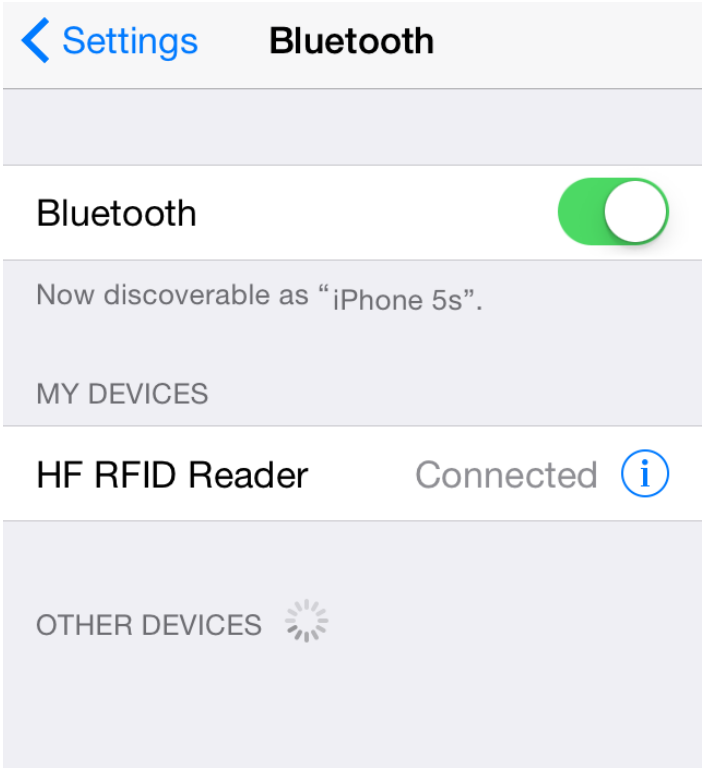


Figure 1-10: The HF RFID Reader now lists as "Connected" in the discoverable devices list.

Step 5:

Launch an app that can accept HID keyboard input, such as Notes. NFC Tag data read by MR10A7 will output to that app, as per Figure 1-11.

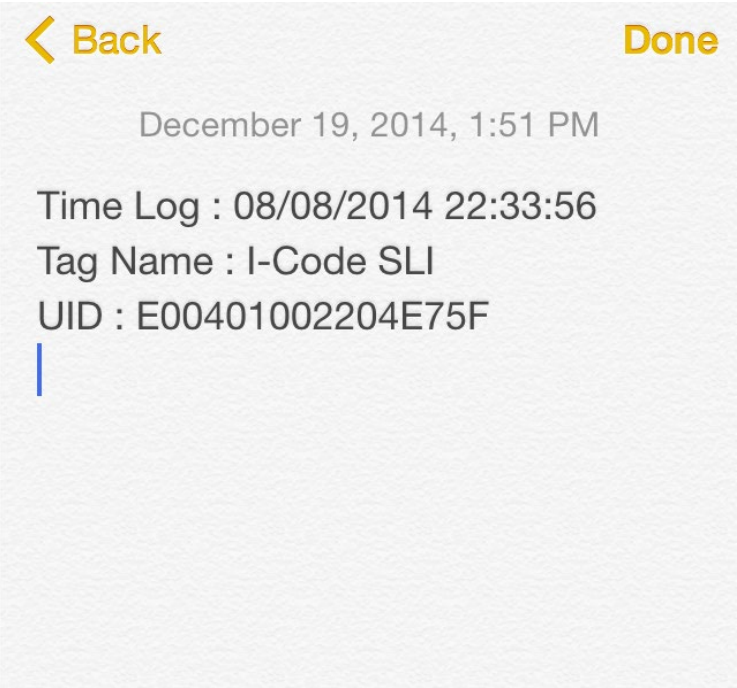


Figure 1-11: NFC Tag data will output to an app

Step 6:

If a virtual keyboard is required, please press the Function Button once, as per Figure 1-12. At this moment the MR10A7 will emit one short beep, and the Apple iOS device's virtual keyboard will pop out.

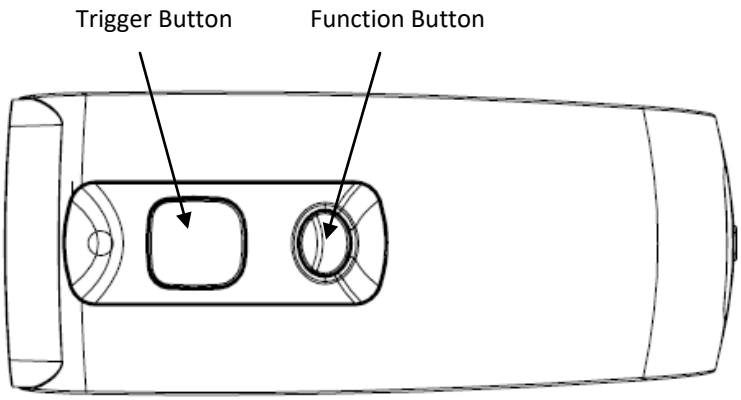


Figure 1-12: Trigger Button and Function Button locations

1-4-5. Connecting to an Android Device

Step 1:
Press and hold the Trigger Button for 2 seconds to boot the unit, after which the blue LED indicator will flash continuously. (If the blue LED does not flash, it means the unit is not currently in Bluetooth Mode. Please refer to Section **5-3. Communication Interface**, and change the Communication Interface to BT-HID.)

Step 2:

On the Android device, go to **Settings > Bluetooth**, and turn on Bluetooth, as per Figure 1-13.

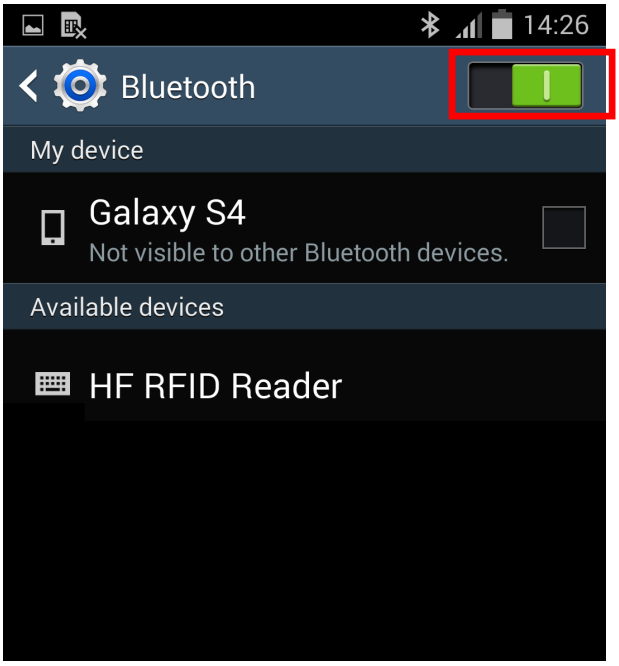


Figure 1-13: Bluetooth Settings screen

Step 3:
In the available devices list, select HF RFID Reader, as per Figure 1-14.

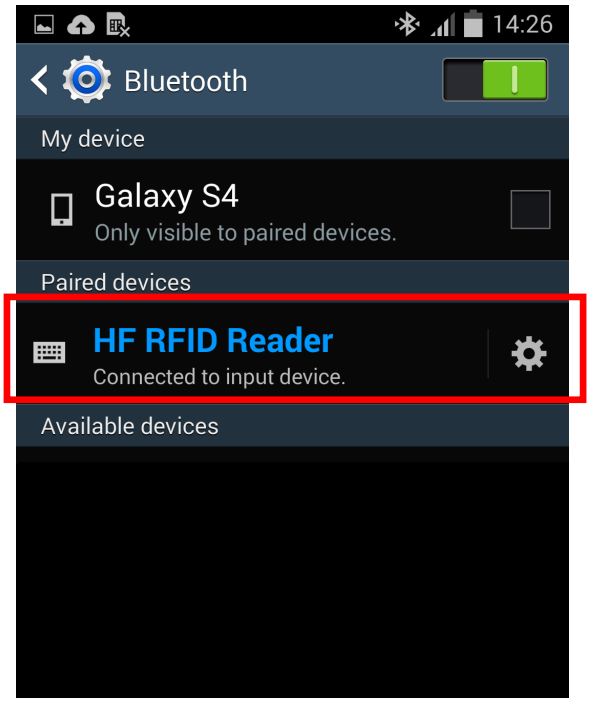


Figure 1-14: Select HF RFID Reader from the Bluetooth Settings screen.

Step 4:
Upon establishing connection the MR10A7 will emit two short beeps and turn off its blue LED indicator. Also, the HF RFID Reader will list as "Connected" in the Android device's Bluetooth devices list, as per Figure 1-15.

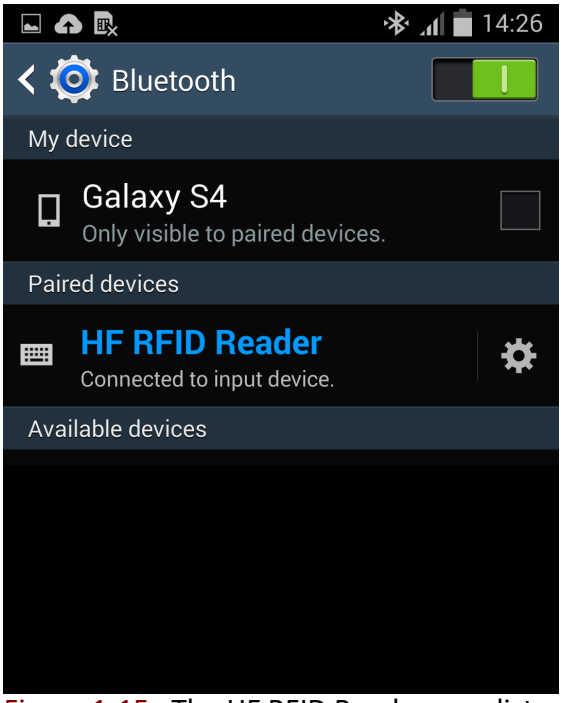


Figure 1-15: The HF RFID Reader now lists as "Connected" in the Bluetooth setup screen.

Step 5:
Launch an app that can accept HID keyboard input, such as ColorNote. NFC Tag data read by the MR10A7 will output to that app, as shown in Figure 1-16.

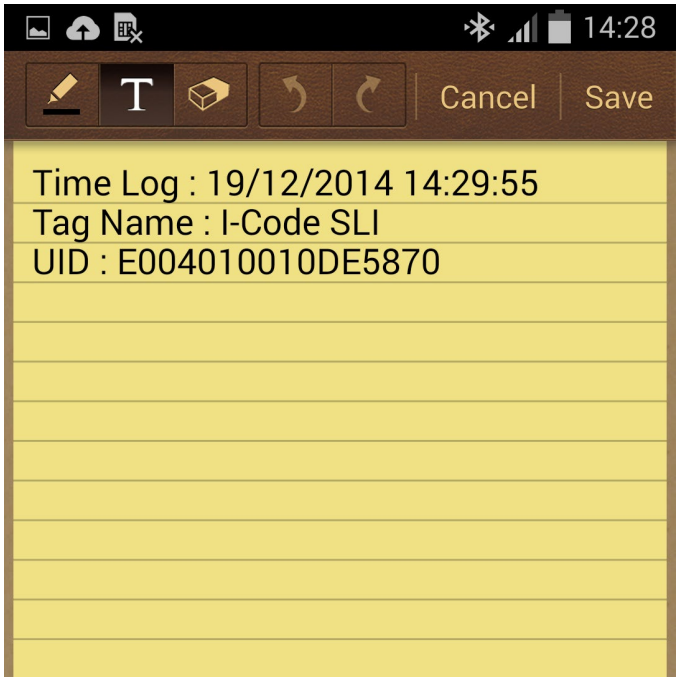


Figure 1-16: NFC Tag data outputs to an app.

Step 6:
If a virtual keyboard is required, please go to **Settings > Language and Input > Default**, and turn off the physical keyboard (or in some cases, turn on the on-screen keyboard) in the Select Input Method screen, as shown in Figure 1-17. At this time the virtual keyboard will resume normal operation.

Figure 1-17: Turn on the on-screen keyboard.

1-4-6. Reading NFC Tags

MR10A7's RFID antenna is located at its front (as per Figure 1-18). When reading, hold the unit, aim at the NFC tag (as per Figure 1-19), and press the Trigger button. If reading is successful (Good Read), the MR10A7 will emit one beep and the green LED indicator will simultaneously lit for one second. Reading Range varies based on NFC tag specifications, as Table 1-4 describes.

Standard	Reading Range
ISO 14443A	0~25mm
ISO 14443B	0~25mm
ISO 15693	0~50mm
Others	0~25mm

Table 1-4: Reading Range for Tags of various standards.

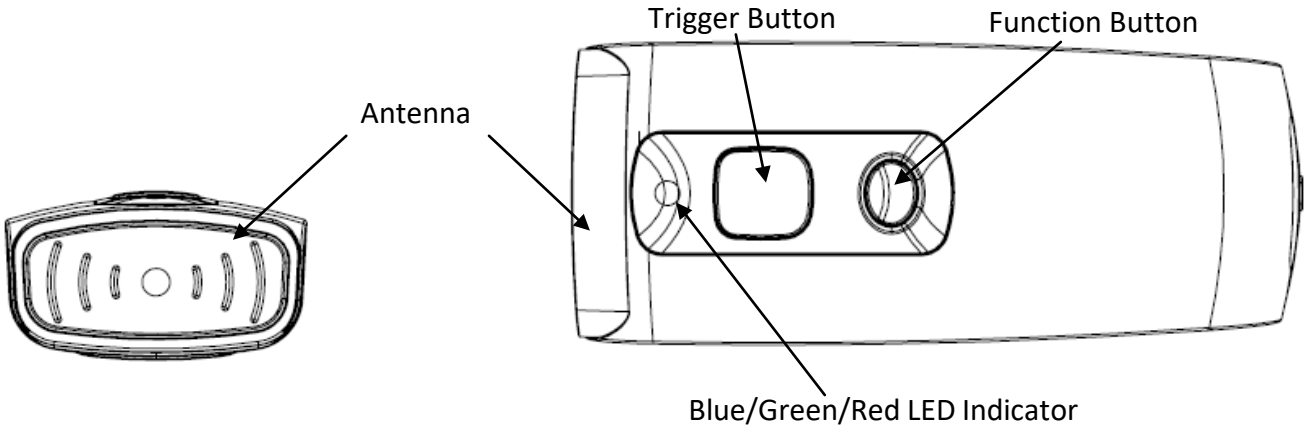


Figure 1-18: Antenna, LED, Trigger Button and Function Button locations

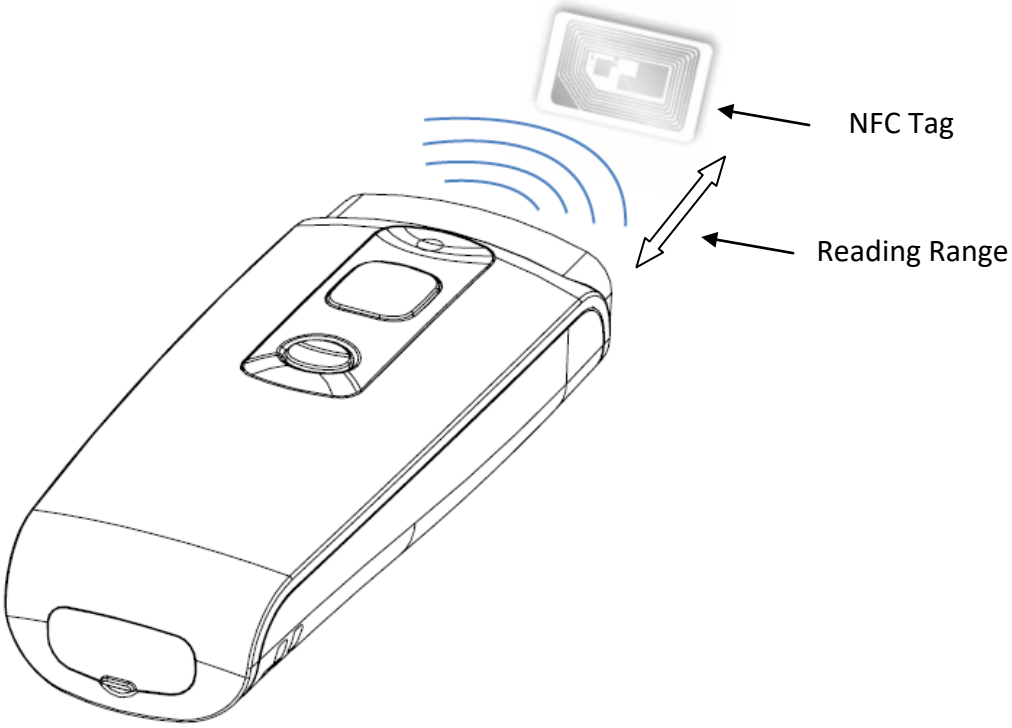


Figure 1-19: Aiming at an NFC Tag and Reading Range

1-4-7. Clearing the Bluetooth Pairing Record

The MR10A7 will save its Bluetooth pairing records and, when disconnected, will automatically attempt to restore previous connections. By doing the following, will clear MR10A7's Bluetooth pairing record, facilitating new connections:

Long press on the Function Button for 5 seconds without releasing. The unit will emit three (3) beeps and the blue LED will start flashing as confirmation that the reader is discoverable by the host.

After clearing its Bluetooth pairing record the MR10A7 will break off all Bluetooth connections, entering Bluetooth Disconnected status.

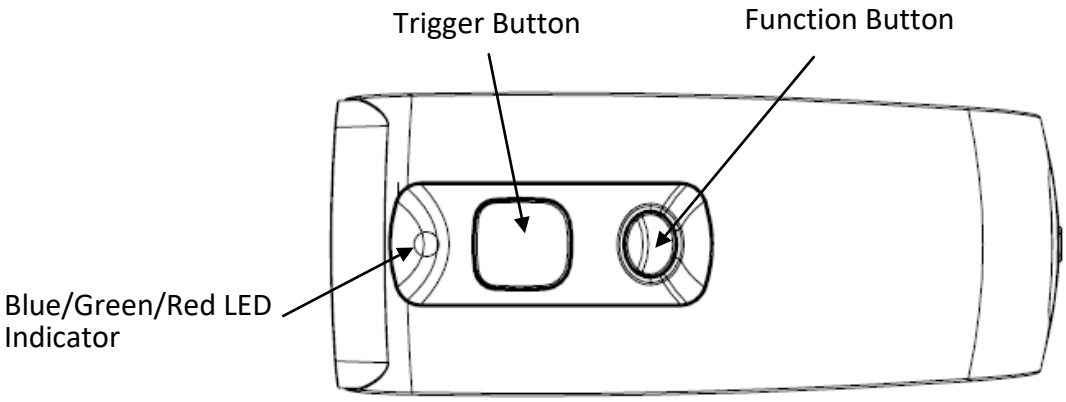


Figure 1-20: Trigger Button and Function Button locations

CAUTION ! After clearing the Bluetooth connection record the MR10A7 will enter Bluetooth Disconnected status and continuously flash its blue LED indicator. If the blue LED indicator does not flash, it means the unit's Communication Interface is not in Bluetooth Mode. Please refer to Section **5-3. Communication Interface**.

1-4-8. Storing/Deleting Memory Data

When the Communication Interface is set to Memory (refer to Section **5-3. Communication Interface**), data obtained from NFC Tag read operations will be stored in MR10A7's memory. The following steps will store or delete the data within.

A. Storing the Data in Memory

Step 1:

After completing an NFC Tag read operation, use a micro USB cable and connect the MR10A7 to a PC/NB.

Step 2

Open the *My Computer* window and enter the removable storage device "MiniScan", as per Figure 1-21.

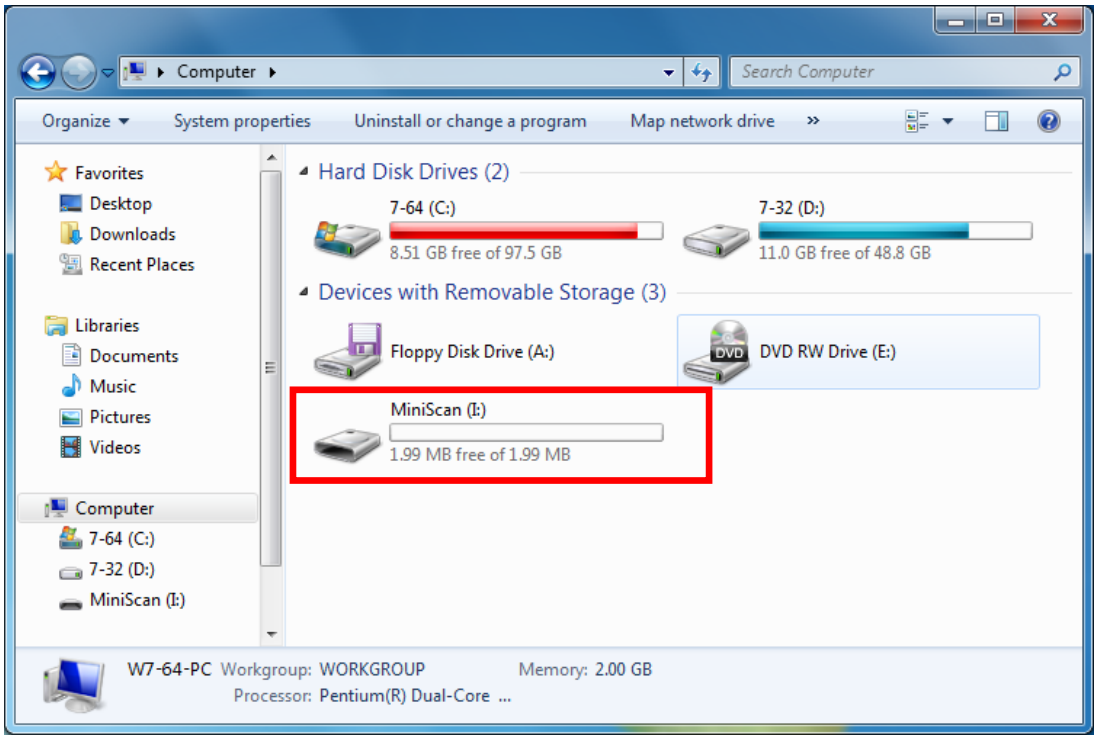


Figure 1-21: Entering the removable storage device "MiniScan" through *My Computer.*

Step 3:

Copy the file TAGDATA.TXT, found in the removable storage device “MiniScan”, to the PC/NB, as per Figure 1-22.

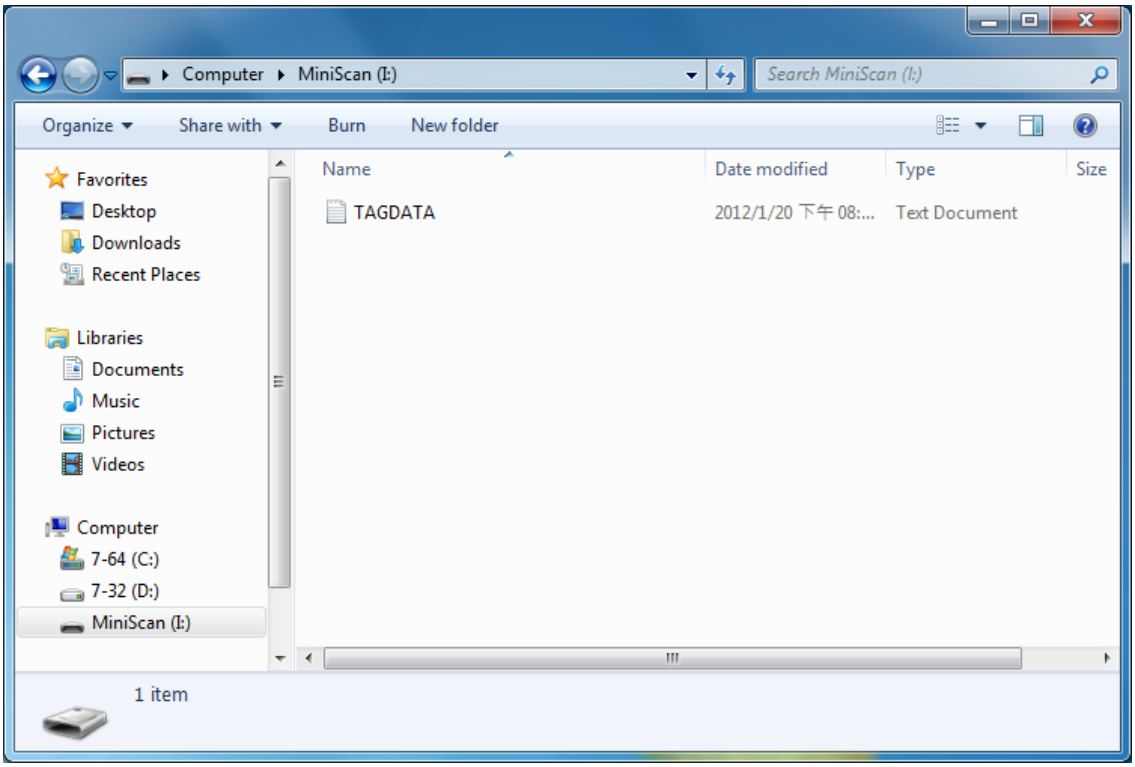


Figure 1-22: Copy the file TAGDATA.TXT to the PC/NB.

Step 4:

Open TAGDATA.TXT using Excel.

Step 5:

In the *Text Import Wizard, Step 1 of 3* dialogue box, choose *Delimited*, and click *Next*, as per Figure 1-23.

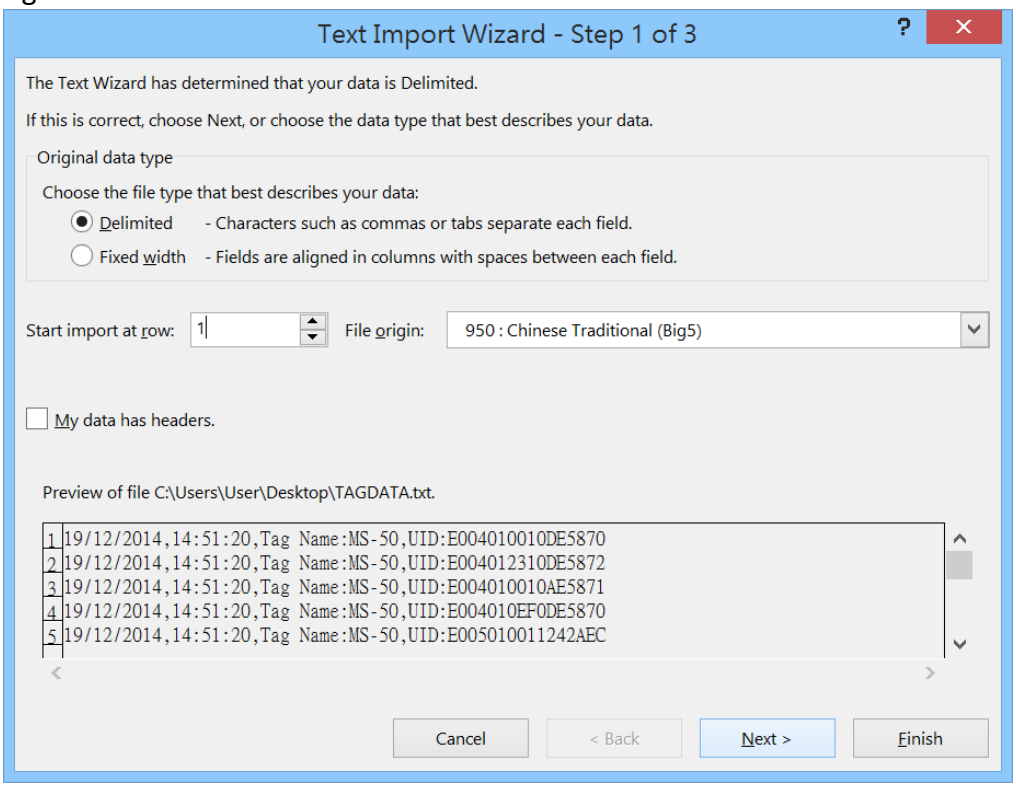


Figure 1-23: *Text Import Wizard, Step 1 of 3* dialogue box.

Step 6:

In the *Text Import Wizard - Step 2 of 3* dialogue box, select Comma, and click *Next*, as per Figure 1-24.

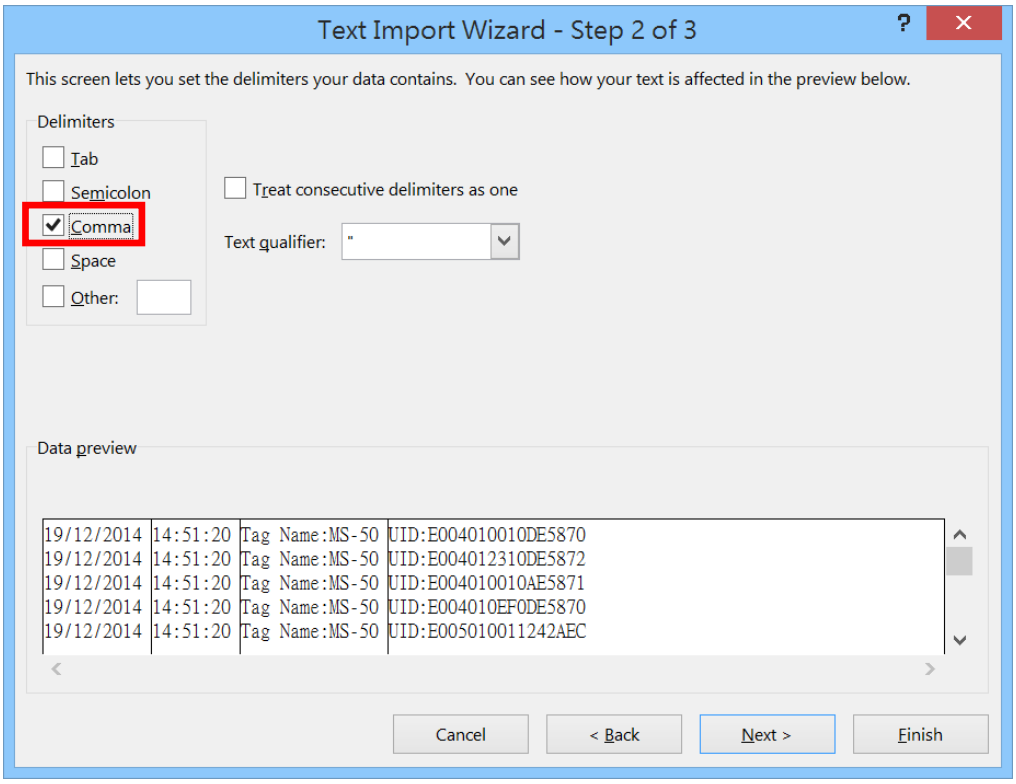


Figure 1-24: *Text Import Wizard - Step 2 of 3* dialogue box

Step 7:

In the *Text Import Wizard - Step 3 of 3* dialogue box, if there are no special requirements, directly click *Finish*, as per Figure 1-25.

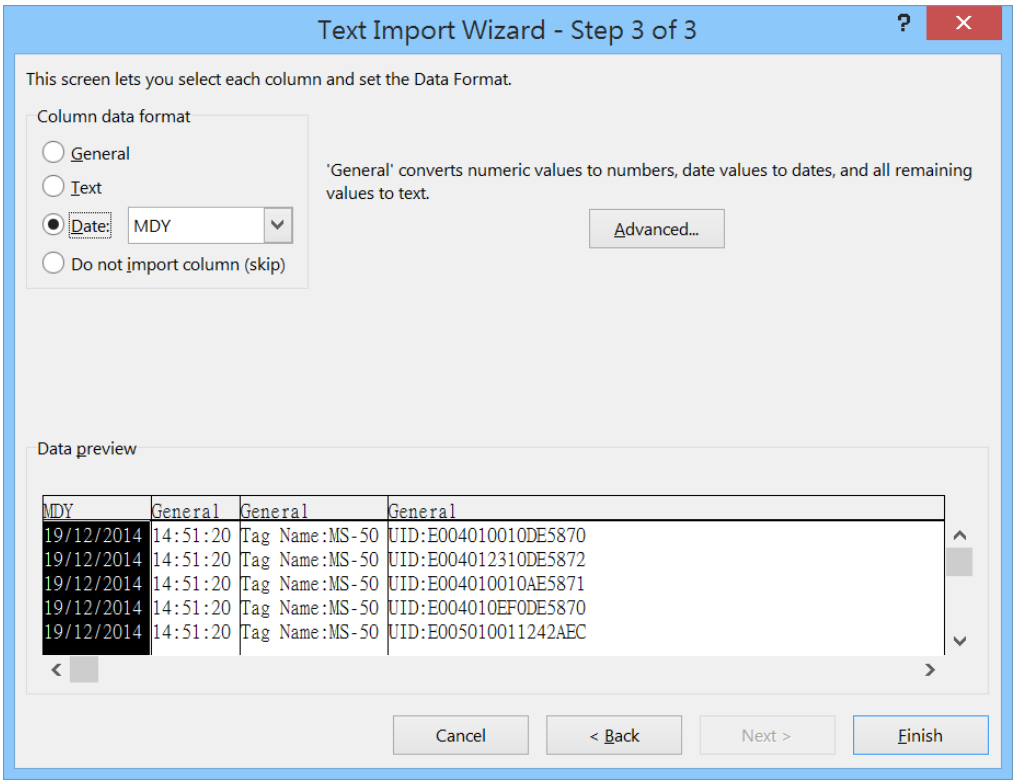


Figure 1-25: *Text Import Wizard - Step 3 of 3* dialogue

Step 8:
The Memory data will appear in the form of an Excel spreadsheet, as per Figure 1-26. If required to change the data format, please refer to sub-section **5-4. Memory Communication Interface**

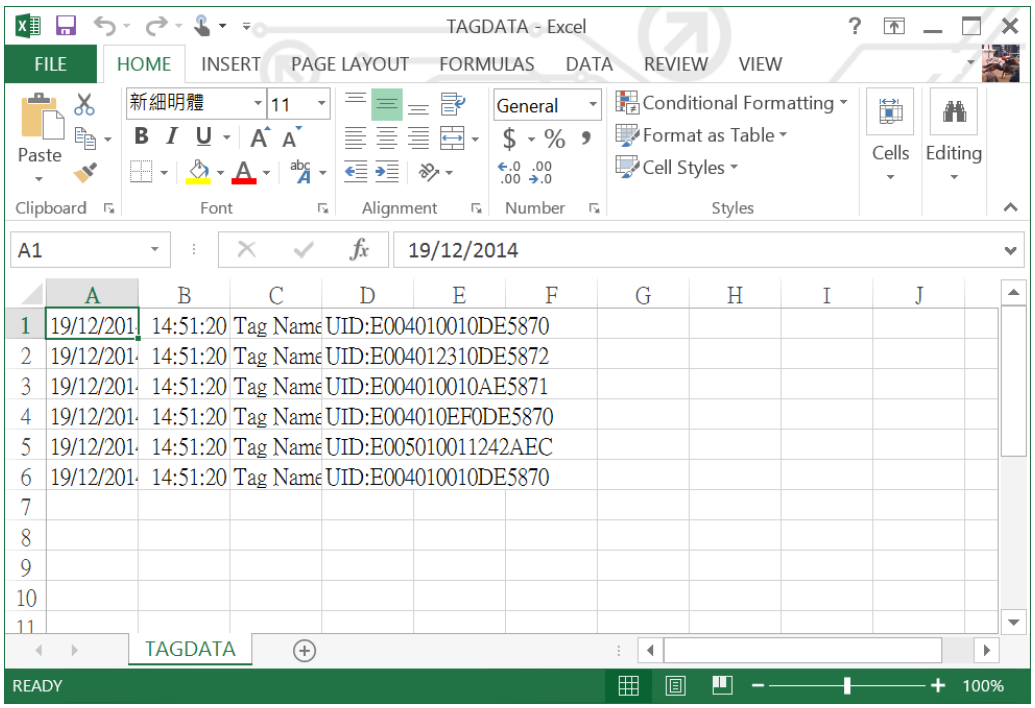


Figure 1-26: Memory data, as shown in an Excel table.

B. Deleting the Data in Memory
To delete the data on MR10A7's Memory, please directly delete the file TAGDATA.TXT in the removable storage device "MiniScan", as per Figure 1-27. In about 5 seconds the MR10A7 will emit 2 short beeps, indicating a successful delete.

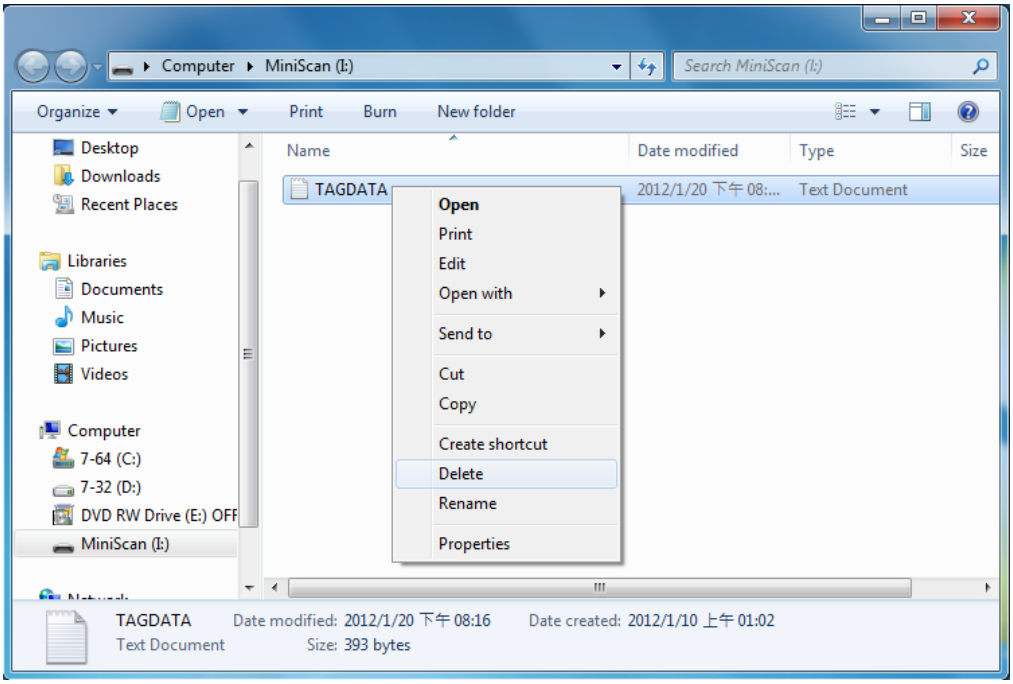


Figure 1-27: Deleting the file TAGDATA.TXT

2. Configuration Mode

2-1. Entering Configuration Mode

Under normal circumstances, the MR10A7 enters the Normal Operation Mode upon power-up. The following steps will switch the MR10A7 to Configuration Mode and connect it to the Host PC's MARSON RFID Utility.

Step 1:
Use a micro USB cable and connect the MR10A7 to the Host PC.

Step 2:
Press and hold MR10A7's Function button first without releasing, then press and hold the Trigger button, as per Figure 2-1. After pressing both buttons for about 5 seconds, the MR10A7 will emit two short beeps, turn on Green LED indicator, and enter Configuration Mode. At the same time it will switch its Communication Interface to USB Virtual COM.

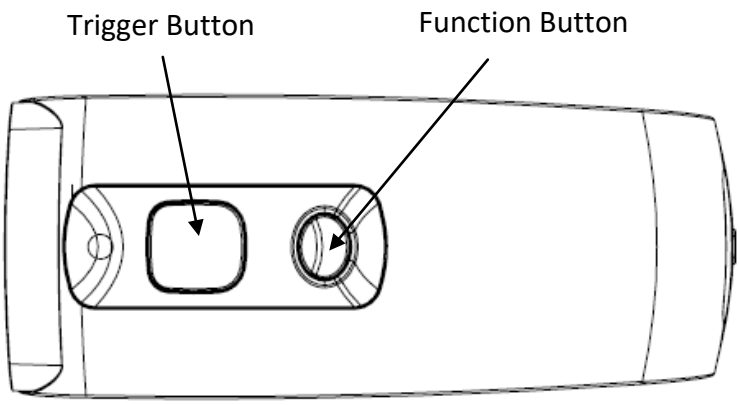


Figure 2-1: Press both buttons on the MR10A7.

Step 3:

Check the Host PC's Device Manager window to see if the USB Virtual COM device has been detected, as per Figure 2-2.

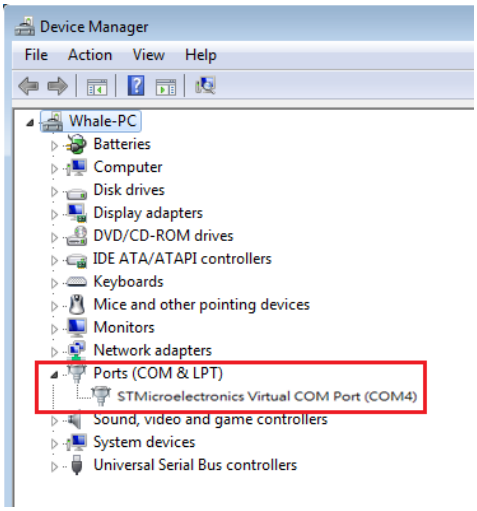


Figure 2-2: Check the Host PC and see whether the USB Virtual COM device has been detected.

Step 4:

Open the MARSON RFID Utility from the Host PC and complete the connection, as per Figure 3-1.

The above steps will switch the MR10A7 to Configuration Mode and connect it to the Host PC's Marson RFID Utility. The User may begin setting parameters on the MR10A7. For details refer to Sections **4. RFID Parameters Setup** and **5. Other Parameters Setup**.

2-2. Canceling / Exiting Configuration Mode

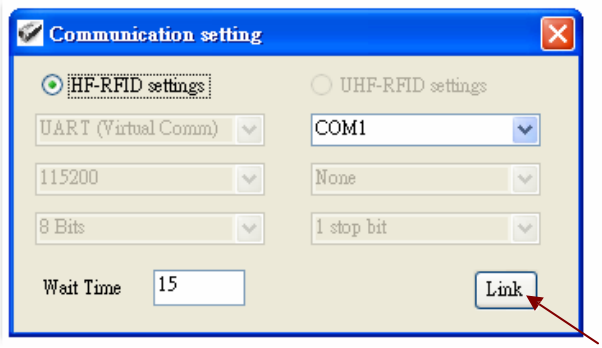
Once the MR10A7 enters Configuration Mode, if there are no communications instructions with the Host PC within the Waiting Time, or if **Exit** is selected within the MARSON RFID Utility, it will automatically exit Configuration Mode and return to Normal Operation Mode. Please refer to Section **6-1. System**. When the unit exits Configuration Mode it will emit 2 short beeps and turn off the Green LED indicator.

While within Waiting Time, pressing MR10A7's Function button and then the Trigger button, holding both buttons for about 5 seconds, will also exit Configuration Mode. For full details refer to Section **5-11. Waiting Time.**

CAUTION ! Prior to entering Configuration Mode, the MR10A7 will record the Communication Interface in use. Therefore if the Communication Interface was BT-HID prior to entering Configuration Mode, upon exiting Configuration Mode the Communication Interface will be restored to BT-HID; if the Communication Interface setting gets changed while in Configuration Mode, for example changed to USB-HID, then upon exiting Configuration Mode the Communication Interface will become the newly designated one, in this case USB-HID. For more on MR10A7's Communication Interface, see Section **5-3. Communication Interface**.

3. Operating the MARSON RFID Utility

Execute MARSON RFID Utility RFID Utility.exe and enter the program; choose the COM port to connect with, and click the "Link" button, as per Figure 3-1. Once connected, you will enter the Program's Main Window, as per Figure 3-2.



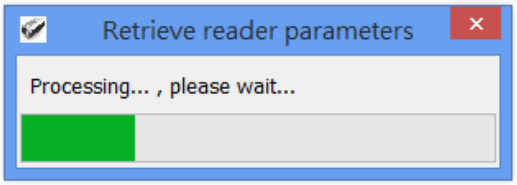


Figure 3-1 Choosing the COM port to connect

3-1. Introduction to Main Window

Once connected, enter the Program Operation main window, as shown in Figure 3-2 and explained below.

(1) The Title Bar (upper-most area) shows the firmware version of the connected MR10A7.

(2) Additional Functions area:

Communication: Disconnect or change the COM port.

Retrieve: Read MR10A7's operation parameters.

Update: Upload presently configured operation data, etc.

For full details please refer to Section **6. MARSON RFID Utility Built-in Functions**

(3) Settings Window: provides System Parameters and Settings.

For full details please refer to **4. RFID Parameters Setup, and 5. Other Parameters Setup**

(4) Notifications Window: Shows currently selected parameters and easy explanations

(5) Status Bar (lower-most area): shows MR10A7's current connection state

(6) Exit: Exit the Utility program and inform MR10A7 as to the program termination. The MR10A7 will return to Normal Operation Mode.

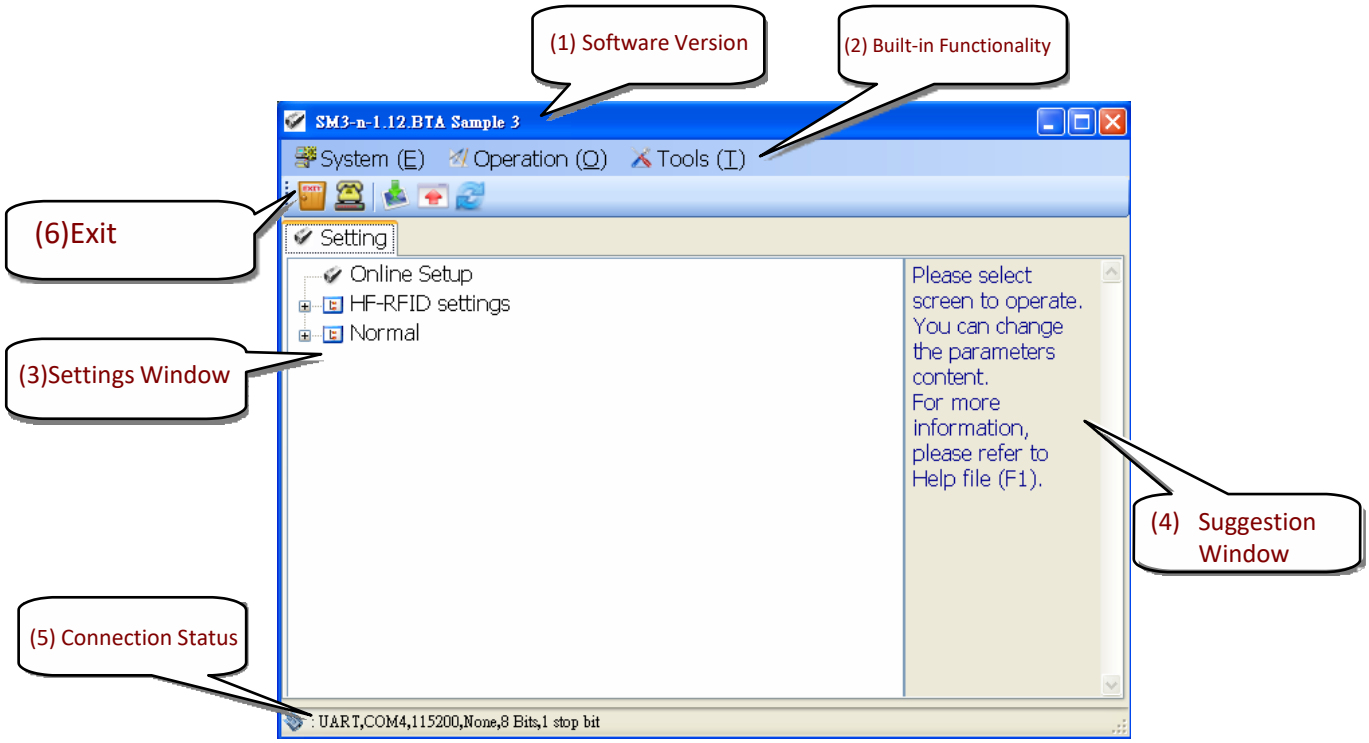


Figure 3-2 Program Operation Main Window

4. RFID Parameters Setup

Below are all options of RFID Parameters Setup displayed in tree view:

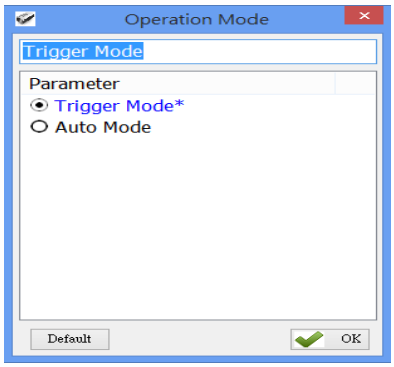
- HF-RFID settings
  - Operation Mode : Trigger Mode
  - Tag Info : Read UID only
  - Operation Timer
    - Session Time : Disable
    - Delay Time : Disable
  - Select Tag Category : ISO 14443A,ISO 15693,ISO 14443B,Other
  - Data Output Format
    - Time Log : Disable
    - Tag Name Data : Disable
    - AFI Data : Disable
    - DSFID Data : Disable
    - UID Data : Enable
    - Data Block Output : Disable
    - No Tag Message : Disable

Figure 4-1 RFID Parameters Setup

Choose the item to configure, then double click the left mouse button or press *Enter* to enter the desired parameters setting window.

4-1. Operation Mode

Figure 4-2



To configure the Operation Mode for either Trigger Mode or Auto Mode, choose one of the two.

Configuration Method:

Check one of the two options, then click OK to send the new setting to the MR10A7.

Default setting: Trigger Mode

Detailed explanations for the two above-mentioned Operation modes are as follow:

(1) Trigger Mode Operation Method:

<A> Press the Trigger button to start a Tag Scan Session. Upon successful Tag Scan (Good Read) the Scan Session will stop.

<B> If the Trigger button is pressed but no successful Tag scan occurred within the Session Time, the Scan Session will terminate. In any case, releasing the Trigger button will terminate the Scan Session.

<C> In Sleep Mode, pressing the Trigger button will automatically reactivate Trigger Mode. For Sleep Mode settings, please refer to **4-8. Enter Sleep Mode / Timer**.

(2) Auto Mode Operation Method:

<A> The Auto Mode follows the same rules of operation as the Trigger Mode, except Tag Scan Sessions start automatically, without pressing the Trigger button.

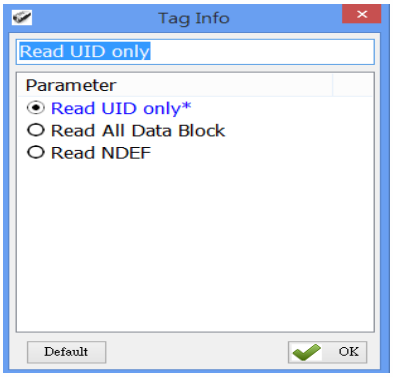
<B> Scan Sessions do not terminate unless the unit enters Sleep Mode.

<C> Pressing the Trigger button while in Sleep Mode will automatically reactivate Auto Mode.

CAUTION ! Auto Mode is more power-consuming.

4-2. Tag Info

Figure 4-3



Tag Info provides user the options of Read UID only, Read All Data Block (reads full data on user memory) and Read NDEF (only reads data that conforms to NDEF(NFC Data Exchange Format) format on user memory)

Configuration Method:

Check one of the three options, then click OK to send the new setting to the MR10A7.

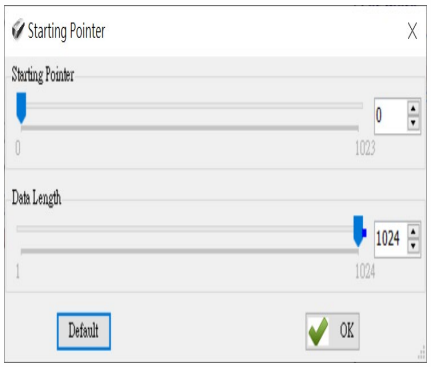
Default setting: Read UID only

CAUTION !

Access Password may be requested if the Tag is locked when Tag Info is set to "Read All Data Block" or "Read NDEF". Please see 4-5-7. Data Block Output to know more about how to output the data block of User Memory.

4-2-1. Starting Pointer and Data Length

Figure 4-4



If Tag Info = Read All Data Block or Read NDEF, Starting Pointer and Data Length are configurable to define .

Configuration Method: Set Starting Pointer and Data Length, once confirmed then click OK to send the new parameter value to the MR10A7.

Default setting: Disable

Starting Pointer (byte): 0 (0~1023)

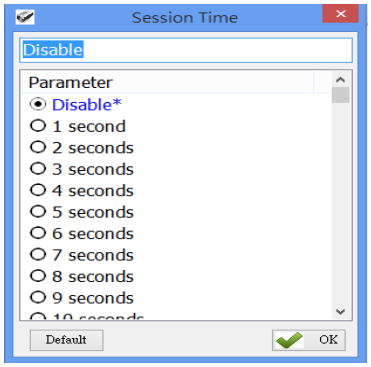
Data Length (byte): 1 (1~1024)

4-3. Session Time and Delay Time

Sets the Session Time for a Scan Session and the Delay Time between Tags Scan.

4-3-1. Session Time Operation Method

Figure 4-5

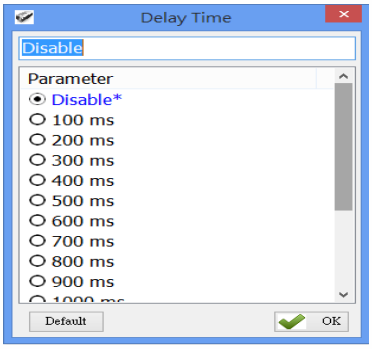


In Trigger Mode, if the Trigger button is pressed and no successful Tag scan is completed within the Session Time, the Scan Session terminates. This may be disabled by setting Session Time to 0 (Disabled).

Configuration Method: Select a value (0~255 seconds). When sure click OK to transfer the set parameter value to the MR10A7.
Default setting: Disable

4-3-2. Delay Time Operation Method

Figure 4-6

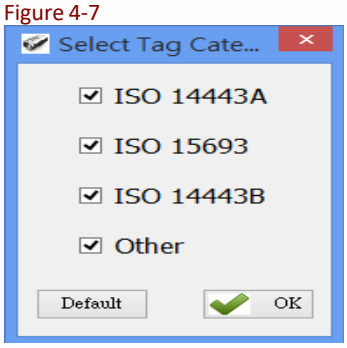


Sets the Delay Time between every Tag scan.

Configuration Method:
Select a value (ranging from 0 ~ 1500ms). When sure click OK to transfer the set parameter value to the MR10A7.
Default setting: Disable (0 ms deactivates)

4-4. Select Tag Category

Figure 4-7



Chooses the types of NFC Tags that may enter a Scan Session. These are divided into ISO14443A, ISO14443B, ISO15693, and Others, as per the ISO. Multiple items may be selected.

Configuration Method: Multiple types may be selected. Once confirmed, click OK to transfer the set parameter values to the MR10A7 Default setting: All are selected

Often seen types of NFC Tags are listed in the table below:

ISO Category	ISO 14443A	ISO 15693	ISO 14443B	Others
Tag Name	Mifare S-50 Mifare S-70 Mifare Ultralight Mifare DesFire SLE66R35(M-Classic)	I-Code SLI ATC 1024 TI-256(Standard) TI-2048(Plus) SRF55V10P(EM)	SRI-X 512 SRI-X 4K	Topaz Felica Felica Lite NTAG 203

Table 4-1: NFC Tag code names

4-5. Data Output Format

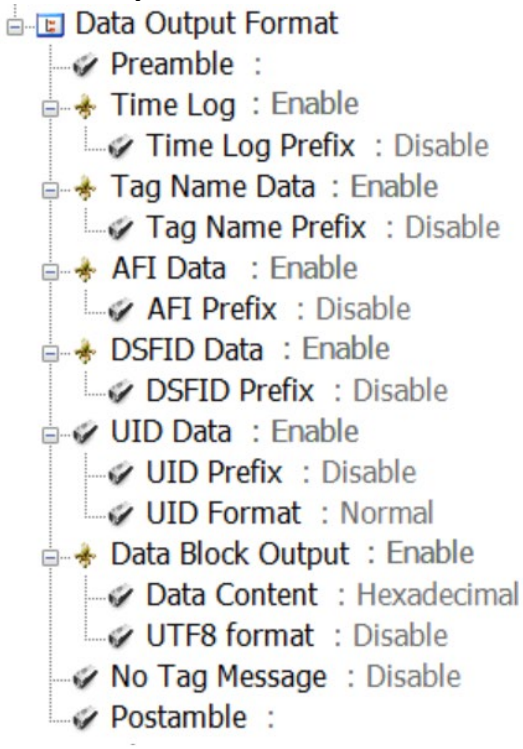
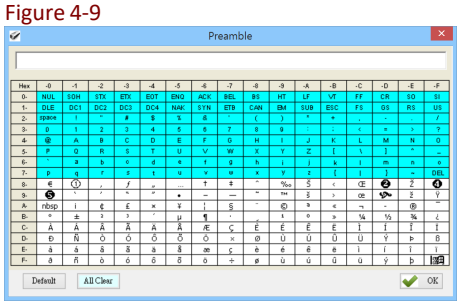


Figure 4-8: Setting the Data Output Format

4-5-1. Preamble

Preamble can be a prefix of up to 16 digits composed of alphanumeric characters/ function codes added to the beginning of an output data.

Figure 4-9



Configuration Method:

Keyboard input or click on the on-screen keyboard.

Default setting: None

Other Data Output Format option includes settings for Time Log, Tag Name, AFI, DSFID, UID and

Data Block (User Memory). For example:

Time Log: 2014/12/19 12:30:59

Tag Name: I-Code SLI

AFI: 10

DSFID: 00

UID: AA839F31

Figure 4-10

Each parameter is set like in Figure 4-10: simply choose one of either ○ Disable ◉ Enable and then click OK to transfer parameter values to the MR10A7.

4-5-2. Time Log

Whether to output the Time Log for Tag scans. For date and time formats please refer to **5-1. Date Format** and **5-2. Time Format**

Time Log:

⦿Disable ○Enable

Configuration Method: Choose one of the two. Default setting: Disable

If Time Log is enabled, the following may also be configured:

4-5-2-1. Configure whether to output Time Log's Caption "Time Log":

Time Log Prefix:

⦿Disable ○Enable

Configuration Method: Choose one of the two

Default setting: Disable

4-5-3. Tag Name

Whether to output Tag code names. Please refer to Table 4-1.

Tag Name Data：

⦿Disable ○Enable

Configuration Method: Choose one of the two.

Default setting: Disable

If Tag Name Data is enabled, the following may also be configured:

4-5-3-1. Configure whether to output Tag Name's caption "Tag Name":

Tag Name Prefix：

⦿Disable ○Enable

Configuration Method: Choose one of the two.

Default setting: Disable

4-5-4. AFI Data

Whether to output AFI data. Only ISO15693 and ISO14443B's Tags provide AFI data.

AFI Data:

⦿Disable ○Enable

Configuration Method: Choose one of the two.

Default setting: Disable

If AFI data is enabled, the following may also be configured:

4-5-4-1. Configure whether to output AFI caption "AFI"

AFI Prefix：

⦿Disable ○Enable

Configuration Method: Choose one of the two.

Default setting: Disable

4-5-5. DSFID Data

Whether to output DSFID. Only ISO15693 Tags provide DSFID data.

DSFID Data：

⦿Disable ○Enable

Configuration Method: Choose one of the two.

Default setting: Disable。

If DSFID is enabled, the following may also be configured:

4-5-5-1. Configure whether to output DSFID's caption "DSFID"

DSFID Prefix：

⦿Disable ○Enable

Configuration Method: Choose one of the two.

Default setting: Disable

4-5-6. UID Data

Whether to output Tags' UID Data.

UID Data：

○Disable ⦿Enable

Configuration Method: Choose one of the two.

Default: **Enable**

If UID Data is enabled, the following may also be configured:

4-5-6-1. Configure whether to output UID caption "UID"

UID Prefix：

⦿Disable ○Enable

Configuration Method: Choose one of the two.

Default setting: Disable

4-5-6-2. Configure whether to output UID in reversed order

UID Format：

⦿Normal ○Reversed

Configuration Method: Choose one of the two.

Default setting: Normal

4-5-7. Data Block Output

Whether to output the data block of User Memory. This is only applicable when **4.2 Tag Info** is set to “Read All Data Block” or “Read NDEF”.

4-5-7-1. Tag Info ＝ ◉ Read All Data Block / ◉Read NDEF

Data Block Output：

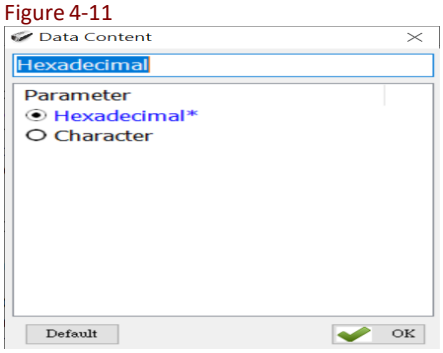
◉Disable　　○Enable

Configuration Method: Choose one of the two.
Default setting: Disable

4-5-7-1-1. Data Content

When Data Block Output is enabled, user can set Data Content

Figure 4-11



Configuration Method:
Choose one of the two, once confirmed then click OK to send the new parameter to the MR10A7.

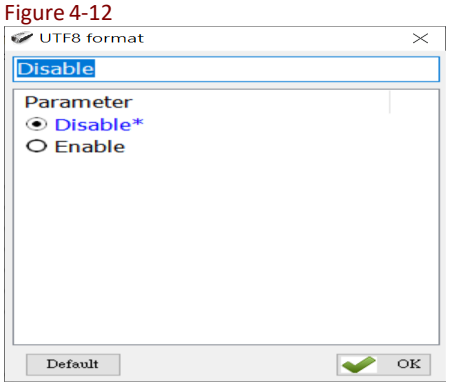
Default Setting:
Hexadecimal

*Note:
Please note that the Hexadecimal converts one byte of data into two.
For Example, tag data <0x37> is send to the host as <0x33><0x37> two bytes in total.
When Character (ASCII) is selected, tag data <0x37> is sent as <0x37>.

4-5-7-1-2. UTF8 Format

When Data Block Output is enabled, user can set UTF8 format

Figure 4-12



Configuration Method:
Choose one of the two, once confirmed then click OK to send the new parameter to the MR10A7.

Default Setting:
Disable

4-5-8. No Tag Message

Whether to output No Tag Message. No Tag Message is a preset message, such as “No Tag”, that displays when no Tag could be read upon terminating a Scan Session. It is applicable only for Trigger Mode.

No Tag Message：

◉Disable ○Enable

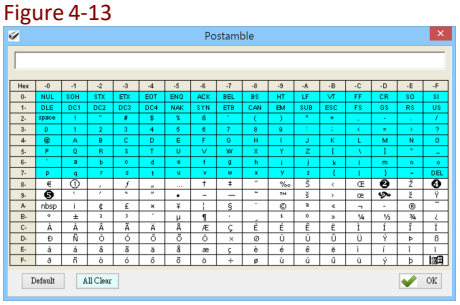
Configuration Method: Choose one of the two.

Default setting: Disable

4-5-9. Postamble

Postamble can be a suffix of up to 16 digits composed of alphanumeric characters/ function codes added to the end of an output data.

Figure 4-13



Configuration Method:

Keyboard input or click on the on-screen keyboard.

Default setting: None

5. Other Parameters Setup

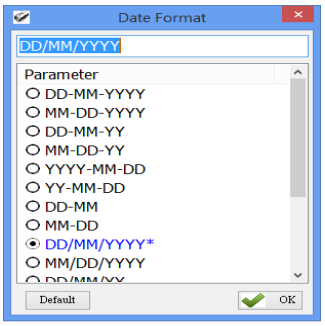
MR10A7 has other parameters not related to RFID, such Date Format, Time Format, Communication Interface, Sleep Mode etc., as per Figure 5-1.

- Normal
  - Date Format : DD/MM/YYYY
  - Time Format : HH:MM:SS
  - Communication Interface : BT-HID
    - Bluetooth
      - BT-ID : HF RFID Reader
      - Host MAC Address :
    - For HID
      - Key Layout : (qwerty) USA
      - Key Numeric : Alpha Numeric
      - Key Caps lock : Lock Off
      - Inter-block : 0 ms
      - Inter-character : 0 ms
    - Data Terminate : <0xE7> <NUL>
  - Enter Sleep Mode : Enable
    - Timer of Sleep Mode : 05:00
  - Beep Tone : Medium
    - Beep Time : 150 ms
  - Vibrator : Disable
  - Wait Time : 5 minutes
  - System Time

Figure 5-1: Other parameters not related to RFID.

5-1. Date Format

Figure 5-2



Data output of memory data's time tag.

Sets how date format is arranged: D means Date, M means Month, Y means Year. 16 choices are available.

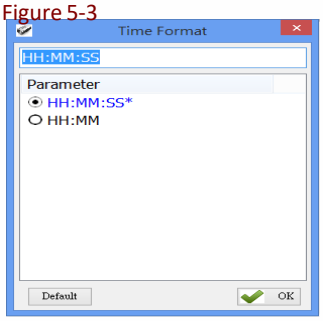
Configuration Method:

Choose one among the 16, and press OK to transfer the parameter setting to the MR10A7.

Default setting: DD/MM/YYYY

5-2. Time Format

Figure 5-3



Time format of memory data's time tag.
Sets how time format is arranged: H means Hour, M means Minute, S means Second. 2 choices are available.

Configuration Method:

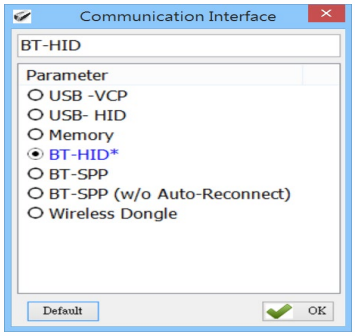
Choose one of the two, and press 

to transfer the parameter value to the MR10A7.

Default setting: HH:MM:SS

5-3. Communication Interface

Figure 5-4



Sets the communication interface between the MR10A7 and the Host PC, meaning the communication interface for MR10A7's data output.
Five choices are available.

Configuration Method:

Choose one of the five, and press  to transfer parameter values to the MR10A7.

Default setting: BT-HID

Each Communication Interface is elaborated upon below:

(1) USB-VCP
Use USB Virtual COM as communication interface.

(2) USB-HID
Use the USB HID Keyboard as communication interface.

(3) Memory
When using Memory as the communication interface, the MR10A7 will store tag data scanned its internal memory (about 2MB in size). To access that file, a wired connection with Host PC is required. Tag data will be stored in ASCII format (2 bytes) or Hexadecimal format (one byte) which is selected in **4-5-0 Data Content Format**

(4) BT-HID
Uses the Bluetooth HID Keyboard communication interface.

(5) BT-SPP
Uses the Bluetooth SPP (BT Virtual COM) communication interface.

(6) BT-SPP (w/o Auto-Reconnect)
Uses the Bluetooth SPP (BT Virtual COM) communication interface.
Reader will not automatically reconnect to the host.

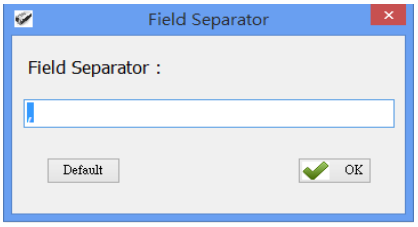
(7) Wireless Dongle
This is an interface that works with Marson MT600 Wireless Dongle only.

5-4. Memory Communication Interface Options

When the Memory Communication Interface is chosen, each scanned data is marked with date and time, and then stored in the internal memory. When the memory is full with data, Tag reading will elicit a warning signal in the form of 3 short beeps and a one second lighting of the red LED indicator, and no reading will actually occur. Only when the data inside the memory has been received and deleted by the Host PC may the Scan Session resume. Choosing Memory as the Communication Interface enables the Field Separator and Storage Sequence configuration options.

5-4-1. Field Separator

Figure 5-5



Sets the symbol used to separate each field for data formatting.

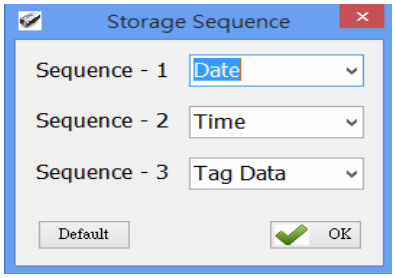
Configuration Method:

Directly input the symbol, maximum 1 Byte in size. Then click OK to transfer the parameter value to the MR10A7.

Default setting: comma (,)

5-4-2. Storage Sequence

Figure 5-6



Sets the storage sequence of the fields Date, Time, Tag Data.

Configuration Method: For each Storage Sequence, choose one of the options. No option may be chosen twice. When done, click OK to transfer the parameter setting to the MR10A7.

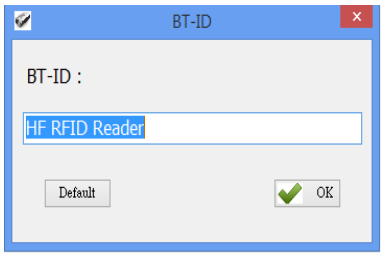
Default setting: Sequence - 1: Date
Sequence - 2: Time
Sequence - 3: Tag Data

5-5. BT-HID and BT-SPP Communication Interface Options

When BT-HID or BT-SPP is chosen as the Communication Interface, the BT-ID and BT-Pin-Code options become available.

5-5-1. BT-ID

Figure 5-7



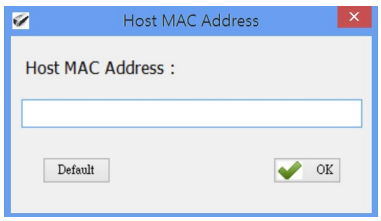
Sets the Bluetooth-ID name, for Host-PC display purposes.

Configuration Method:
Choose a desired phrase, maximum 16 Bytes. Once chosen, click OK to transfer the parameter value to the MR10A7.

Default setting: HF RFID Reader

5-5-2. Host MAC Address

Figure 5-8



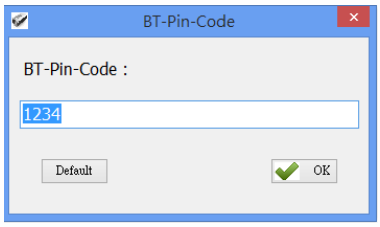
Sets the MAC address of the host that MR10A7 will automatically connect with.

Configuration Method:
Enter the Bluetooth MAC address (without colon ":"), maximum 12 Bytes. Once chosen, click OK to transfer the parameter value to the MR10A7.

Default setting: Null

5-5-3. BT-Pin-Code

Figure 5-9



Sets the Pin-Code used when connecting to the Host-PC via BT-SPP.

Configuration Method:
Enter the Pin-Code value, maximum 8 Bytes. Once chosen, click OK to transfer the parameter value to the MR10A7.

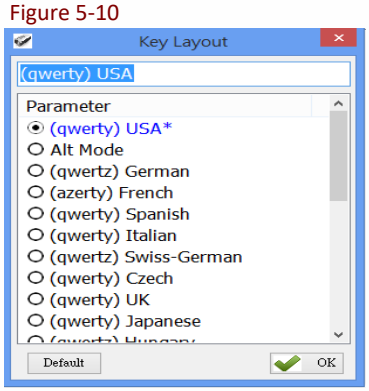
Default setting: 1234

5-6. USB-HID and BT-HID Communication Interface Options

When USB-HID or BT-HID are chosen as the Communication Interface, additional options become available. These include Key Layout, Key Numeric, Key Caps lock, Inter-block, and Inter-character.

5-6-1. Keyboard Layout

Figure 5-10



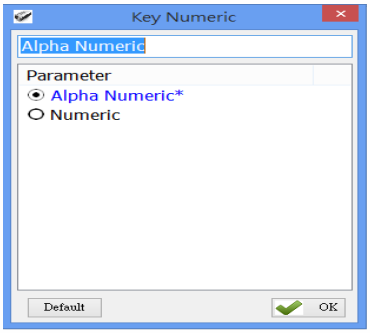
Sets the language used for MR10A7's data output to the Host-PC. 24 choices are available.

Configuration Method:
Choose one, then click OK to transfer the parameter setting to the MR10A7.

Default setting: (qwerty) USA

5-6-2. Key Numeric

Figure 5-11



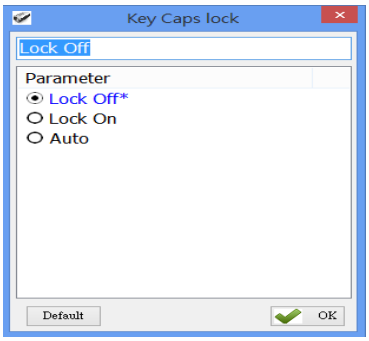
Sets the keyboard used for MR10A7's Scan Code output.

Configuration Method:
Choose one, then click OK to transfer the parameter setting to the MR10A7.

Default setting: Alpha Numeric

5-6-3. Key Caps Lock

Figure 5-12



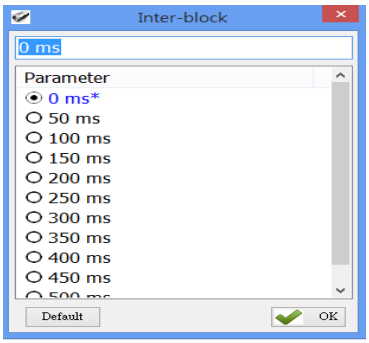
Sets the keyboards Caps Lock state to On, Off or Auto.

Configuration Method:
Choose one, then click OK to transfer the parameter setting to the MR10A7.

Default setting: Lock Off

5-6-4. Inter-black Interval Time

Figure 5-13



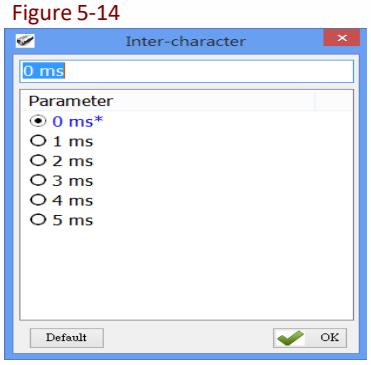
Sets the Interval Time between each packet of data (including the separator symbol) and the next.

Configuration Method:
Choose one (value range 0 ~ 500 ms), then click OK to transfer the parameter setting to the MR10A7.

Default setting: 0 ms (deactivated)

5-6-5. Inter-character Interval Time

Figure 5-14



Sets the Interval Time between one character and the next within each packet of data.

Configuration Method:

Choose one, then click OK to transfer the parameter value to the MR10A7.

Default setting: 0 ms

5-7. Data Terminator

Sets the terminator symbol used when uploading MR10A7's data to the Host-PC. It can be 1 or 2 Bytes depending on the Communication Interface.

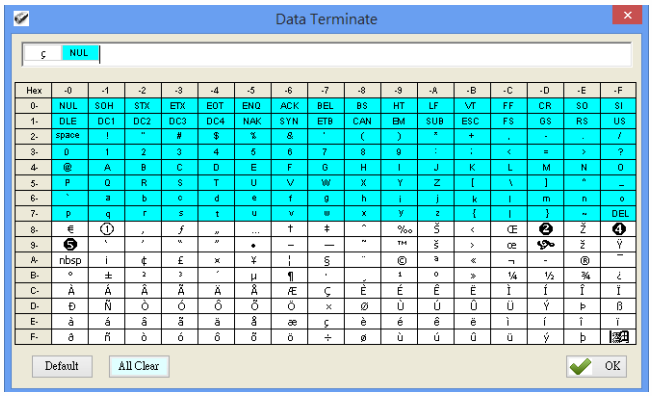


Figure 5-15

Configuration Method:
Choose or type in a symbol using the special keyboard shown in Figure 4.14. Show 1 or 2 Bytes. When sure, click OK to transfer the parameter value to MR10A7.

(1) Data Terminator of USB-HID / BT-HID interface:

Default: NUL (<0xE7><0x00>). Totals 2 Bytes

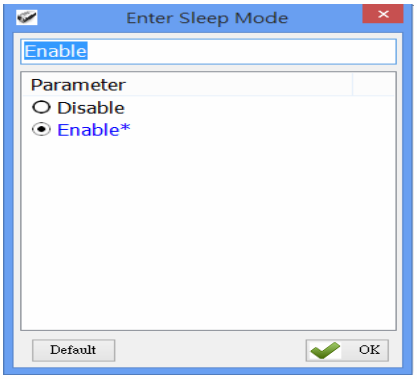
(2) Data Terminator of USB-VCP / BT-SPP interface:

Default: CR LF (<0x0D><0x0A>). Totals 2 Bytes

5-8. Sleep Mode / Timer

Sets the activation status for Sleep Mode and the Timer value used for entering Sleep Mode. The MR10A7 will enter Sleep mode to conserve power if there is no successful Tag scan within a set amount of time.

Figure 5-16



5-8-1. Enter Sleep Mode

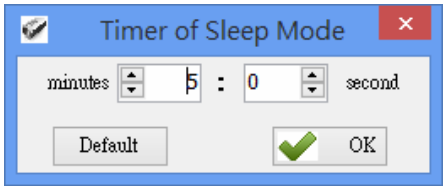
Sets whether to activate Sleep Mode.

Configuration Method:

Choose one, then click OK to transfer the parameter setting to the MR10A7.

Default setting: Enable (activate)

Figure 5-17



5-8-2. Timer of Sleep Mode

Sets the waiting time for entering Sleep Mode.

Configuration Method:
Choose a value (range 00:10 ~ 60:00 mm:ss), then click OK to transfer the parameter value to the MR10A7.

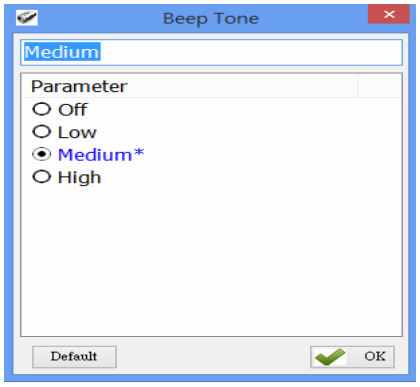
Default setting: 05:00

5-9. Buzzer

Beep tones serve as an indication of operation status. One short beep signifies a Good Read within a Scan Session; 3 short beeps warn of an error.

5-9-1. Beep Tone

Figure 5-18



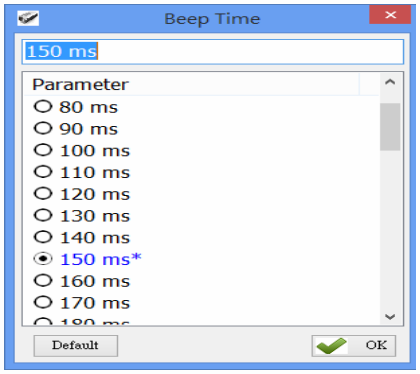
Sets the beep volume or disables beeping.

Configuration Method:
Choose one, then click OK to transfer the parameter setting to the MR10A7.

Default setting: Medium

5-9-2. Beep Time

Figure 5-19



Sets the beep length for the short beep used to signify a Good Read.

Configuration Method:
Choose a value between 50 ~ 500 ms, using 10 ms intervals.

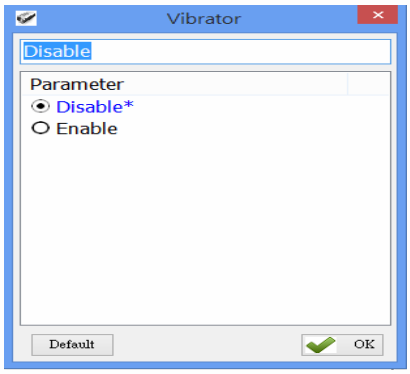
When confirmed, click OK to transfer the parameter value to the MR10A7.

Default setting: 150 ms

5-10. Vibrator

Sets whether to activate the Vibrator, which may be used to signify a Good Read during a Scan Session.

Figure 5-20



Configuration Method:
Choose one of the options, then click OK to transfer the parameter setting to the MR10A7.

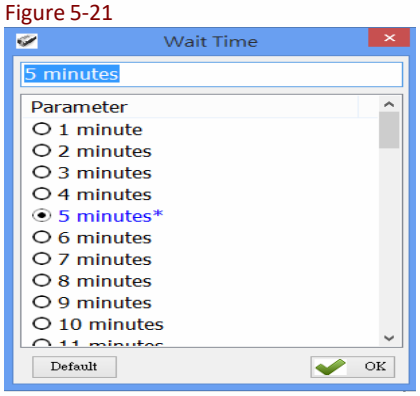
Default setting: Disable (deactivated)

***Note:** The duration of vibration is fixed at 200 ms.

5-11. Waiting Time

Sets the waiting time used prior to automatically exiting MR10A7's Configuration Mode.

Figure 5-21



When the MR10A7 is in Configuration Mode, if there are no communication instructions between it and the Host PC within a Waiting Time, it will automatically exit Configuration Mode and return to Normal Operation Mode. Or, while within Waiting Time, if the MR10A7's Function button is pressed, followed by the Trigger button, and both buttons are held for about 5 seconds, it will also exit Configuration Mode.

Configuration Method:
Select a value between 1 ~ 60 minutes, using 1 minute intervals. When confirmed, click OK to transfer the parameter value to the MR10A7.

Default setting: 5 minutes

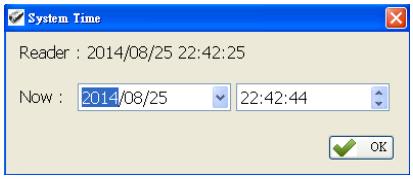
5-12. System Time

Sets the MR10A7's System Time

Date format: Year (4 digits), Month (2 digits), Date (2 digits). e.g. Date: 2014/12/19

Time format: Hour (2 digits), Minute (2 digits), Second (2 digits). e.g. Time: 09:50:30

Figure 5-22



Configuration Method:
Input the Year, Month, Day, Hour, Minute, Second within their respective value ranges. When confirmed, click OK to transfer the parameter values to the MR10A7.

Default: Synchronized as Host-PC's System Time

6. Additional Functions

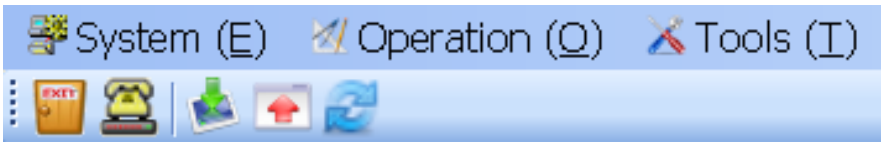
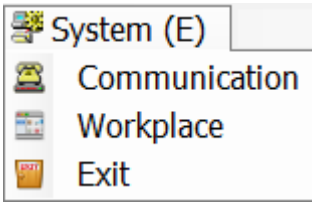


Figure 6-1： RFID Utility's Additional Functions

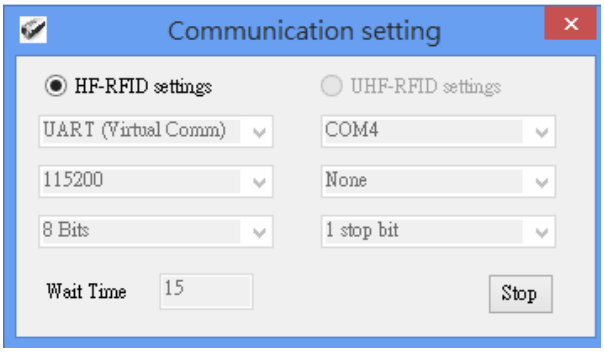
MARSON RFID Utility's additional functions include System, Operation and Tools, as below:

6-1. System



<A> Communication: When connected, you may press "Stop" to get disconnected and change COM port and initiate another connection.

Figure 6-2



CAUTION ! When terminating a connection, the system will force MR10A7 to terminate the configuration process.

<B> Workplace: Functions such as Reset to Default Window, Window Size, Fonts …etc, are configurable in the Workplace Window.

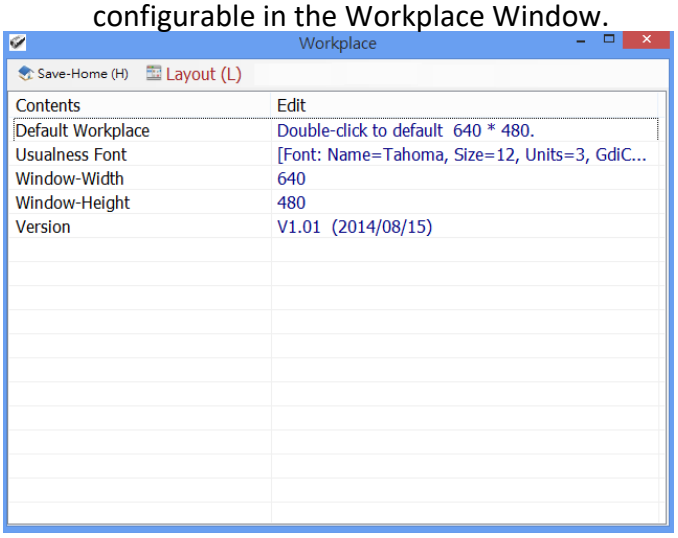


Figure 6-3

In the lower part of selection window, choose the item you wish to adjust, then double click on it with your mouse or press the *ENTER* key to start adjusting.

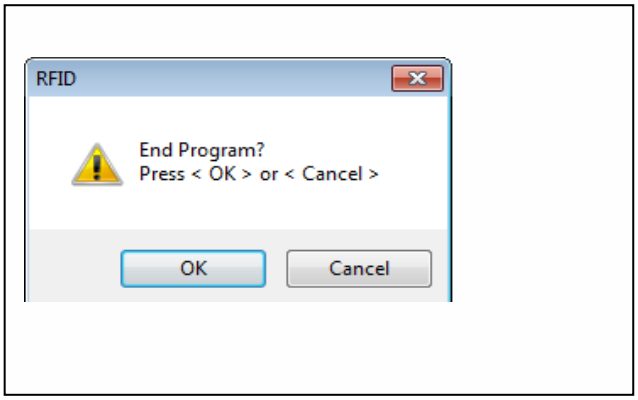
(1) Default Workplace: Restores all defaults, including window size, font style, font size, etc.

(2) Usualness Font: Mostly used for adjusting fonts for the Main Menu. The user determines its use.

(3) Window-Width, Height: Adjusts window size only for the Main Window.

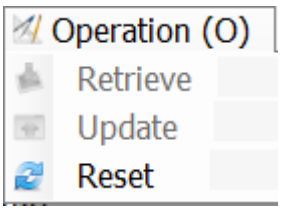
<C> Exit: When exiting the MARSON RFID Utility, the system will ask whether to terminate all configuration operation.

Figure 6-4



CAUTION ! When exiting from the MARSON RFID Utility is confirmed, the system will instruct the MR10A7 to terminate the configuration process.

6-2. Operation



<A> Retrieve: Read parameter values from the connected MR10A7.

Update: Upload the currently set parameter values.

Only when connected to an MR10A7 may Retrieve and Update be used.

<B> Reset: Restore all parameters to their Default settings.

< i > When the **MR10A7** is connected to the **Host-PC**

Can restore all parameter values for the current Settings window to their previous states (Undo All Changes), restore them to their factory Default settings (Reset Parameters to Default), or restore all parameters inside the MR10A7 to their factory Default settings (Reset **Reader's** Parameter to Default).

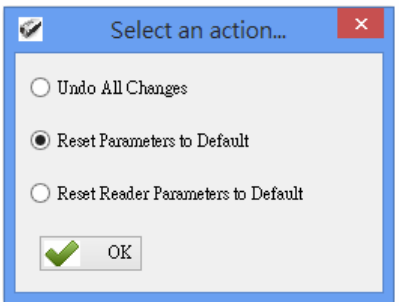


Figure 6-5

< ii > When the **MR10A7** is disconnected from the **Host-PC**

Can restore all parameter values for the current Settings window to their previous states (Undo All Changes), or restore them to their factory Default settings (Reset Parameters to Default).

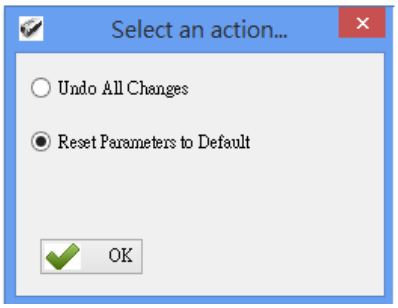


Figure 6-6

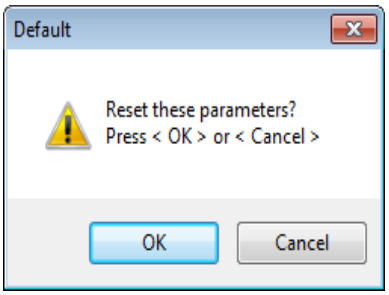
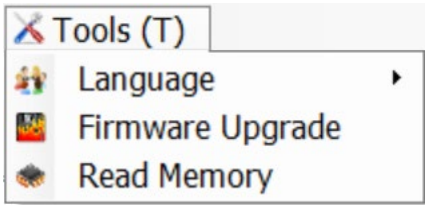


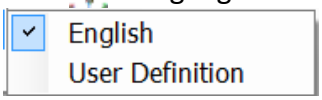
Figure 6-7

The System will ask whether to confirm execution, as per Figure 6-7.

6-3. Tools



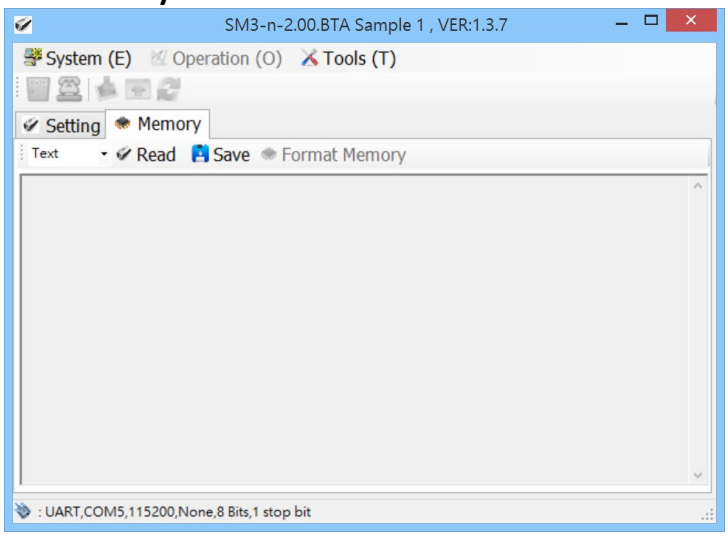
<A> Language: Sets the display language.



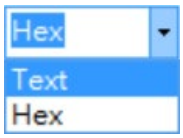
<B> Firmware Upgrade: Updates firmware on the MR10A7.
Please refer to **7. Updating Firmware on MR10A7.**

<C> Read Memory: To retrieve the stored data on the MR10A7 through the RFID Utility. Please refer to **6-3-1. Memory.**

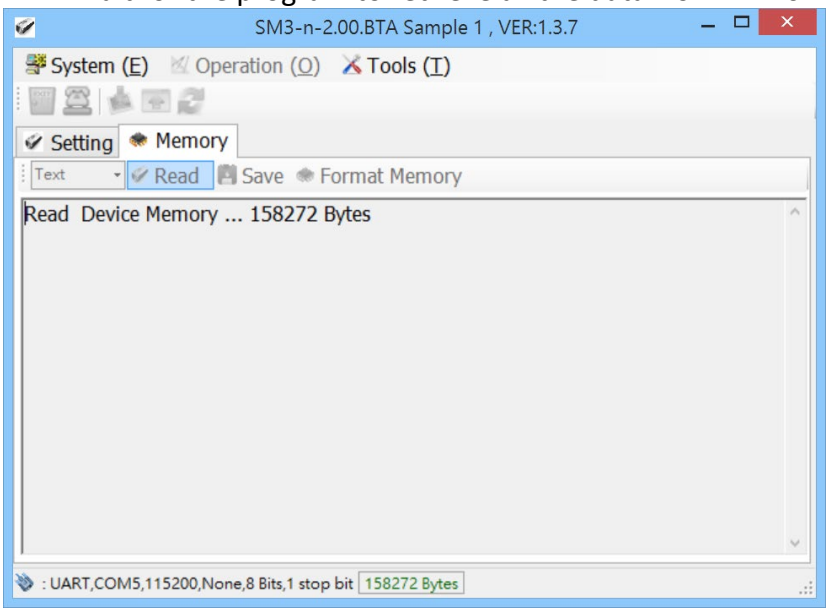
6-3-1. Memory



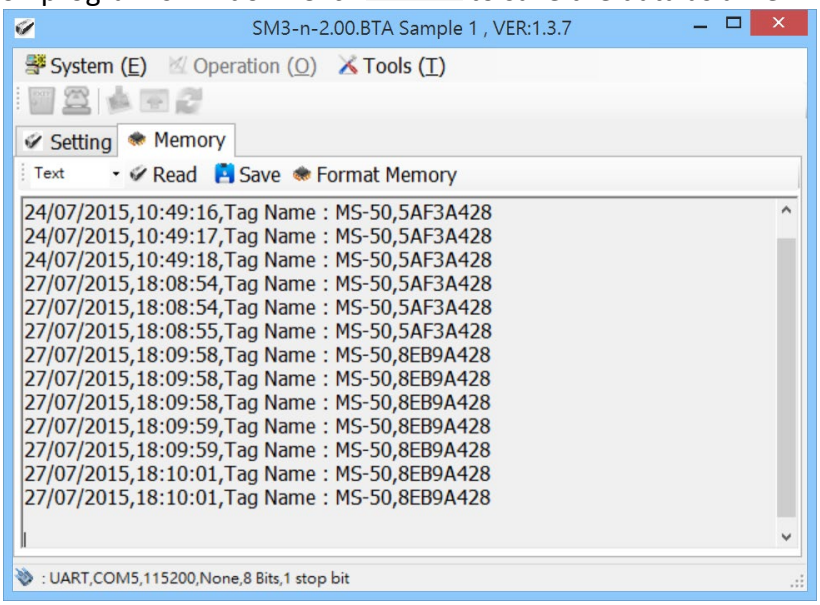
< i > Select the desired output data format: “Hex” or “Text”.
Or click Read with “Text” as the default data format.



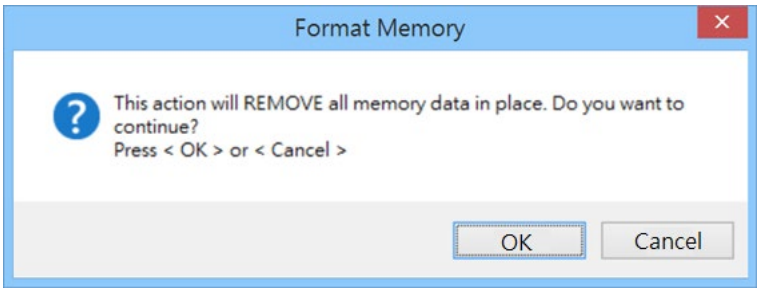
< ii > Wait for the program to retrieve all the data from MR10A7.



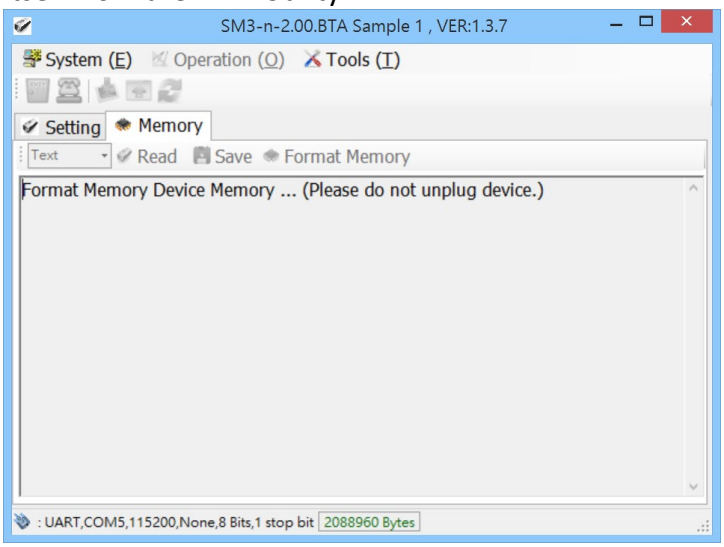
< iii > When the program has finished retrieving the data, the data will be displayed on program's window. Click Save to save the data as a New Text File.

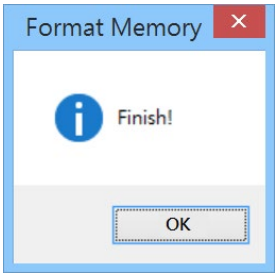


< iv > If you want to format the memory on MR10A7, please click Format Memory.
A pop-up window will appear and warn that this will remove all the memory data.
Click OK to continue.



< v > While the utility is formatting the memory, DO NOT unplug the MR10A7.
Once the formatting process is completed, a “finish!” pop-up window will appear, and the MR10A7 will automatically terminate the configuration mode and disconnect itself from the RFID Utility.





7. Updating Firmware on MR10A7

7-1. Entering Firmware Update Mode

Under normal circumstances, the MR10A7 boots into the Normal Operation Mode. The following steps will move the MR10A7 to Firmware Update Mode and connect it to the Host PC's RFID Utility, to facilitate firmware upgrade through USB Virtual COM communication. Steps are as follow:

Step1:

Make sure that the MR10A7 is disconnected from the Host-PC.

Connect the MR10A7 to the Host PC using the Micro USB Cable.

Step 2:

Press the Function button and the Trigger button on the MR10A7, as per Figure 7-1. Hold both buttons, do not release, and use a pin or a straightened paperclip to press the Reset button on the bottom, as per Figure 7-2. The MR10A7 will enter the Firmware Update Mode.

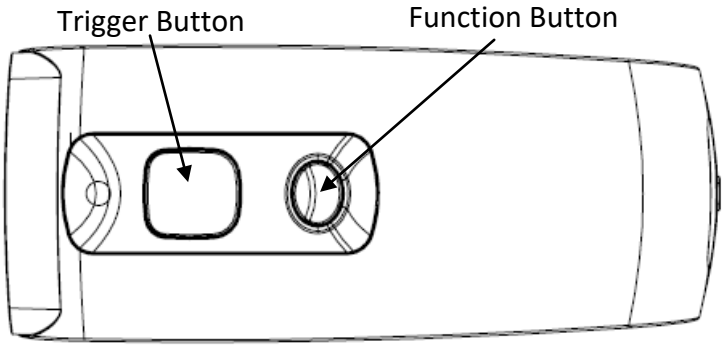


Figure 7-1: Press both buttons on the MR10A7 simultaneously.

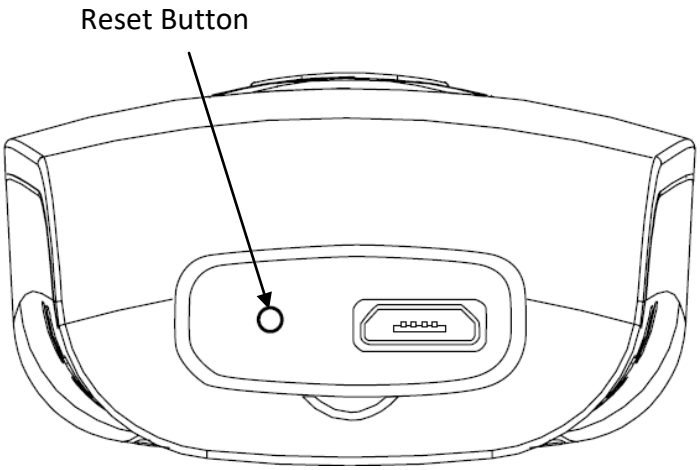


Figure 7-2: Press the Reset button

Step 3:

Still holding down the Function button and Trigger button, check the Device Manager on the Host PC to see if a USB Virtual COM has appeared, as per Figure 7-3. Now release the Function button and the Trigger button. The MR10A7 will automatically change its Communication Interface to USB Virtual COM.

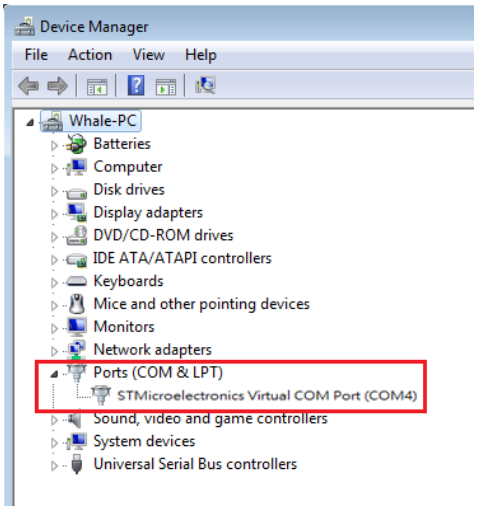


Figure 7-3: Check the Host-PC to see if it has detected the USB Virtual COM.

7-2. Executing Firmware Update

Step 1:

Execute the RFID Utility.exe program. Do not establish a connection.

Press ☒ to cancel the connection process and enter the program, as per Figure 7-4.

Figure 7-4

Step 2:

Choose Tools (T) and execute Firmware Upgrade

Please refer to **6-3. Tools**

Step 3

Choose the COM port, as per Figure 7-5.

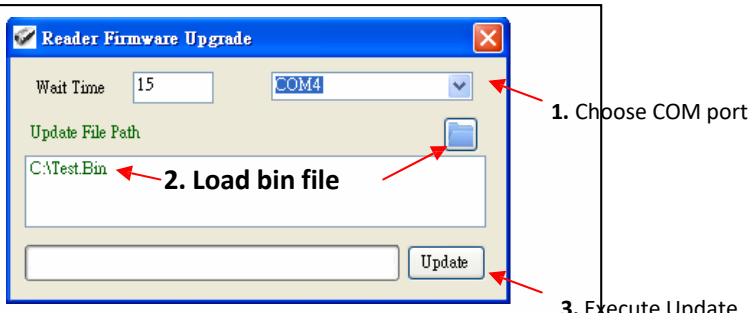


Figure 7-5

Step 4:

Load the bin file, as per Figures 7-5 and 7-6.

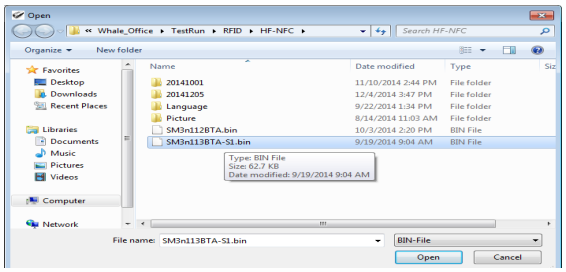


Figure 7-6

Step 5:

Click Update to execute firmware upgrade, as per Figure 7-5. The system will ask whether to confirm execution.

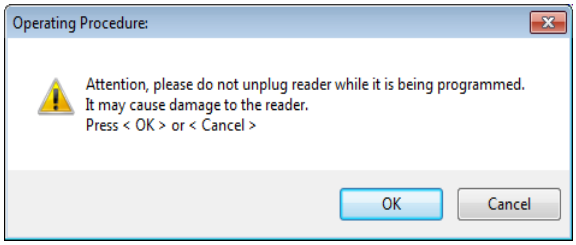


Figure 7-7

CAUTION ! While the **MR10A7 is updating its firmware** (Figure 7-8), please avoid unnecessary errors and do not unplug the cable. Incomplete firmware update may cause damage to unit.

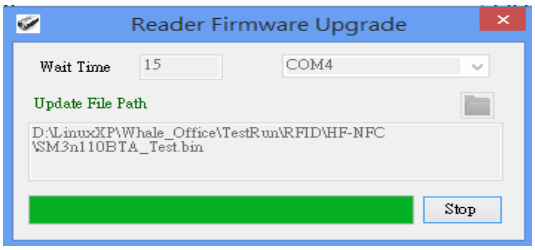


Figure 7-8

Step 6:

When update is complete, click “OK”to finish the update program, as per Figure 7-9. The MR10A7 will reboot and return to Normal Operation Mode.

Figure 7-9