

# CipherLab User Guide

1800Configuration

Version 2.02



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# RELEASE NOTES

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Version	Date	Notes
2.02	Jun. 25, 2015	1800Configuration utility v2.02 updated <ul style="list-style-type: none"><li>▶ New: <b>Chapter 5 – Function Key</b> added</li></ul>
2.00	Dec. 11, 2014	1800Configuration utility v2.00 updated <ul style="list-style-type: none"><li>▶ Modified: <b>File-&gt;New</b> – “1862” item added</li><li>▶ Modified: <b>Tools</b> – “Date &amp; Time” item added</li><li>▶ Modified: <b>Tools</b> – “RF Band” item removed</li><li>▶ Modified: <b>1.1.3 Authentication</b> – updated</li><li>▶ Modified: <b>1.2.12 Authentication</b> – updated</li><li>▶ Modified: <b>3.1.2</b> – default scan delay time for 1861/1862 updated</li><li>▶ Modified: <b>Chapter 1~3</b> “Date &amp; Time” tab removed from the configuration window</li><li>▶ Modified: <b>Chapter 4~5</b> screenshots updated</li><li>▶ Modified: <b>Appendix I</b> screenshots updated</li></ul>
1.02	Mar. 05, 2013	1800Configuration utility v1.04 updated <ul style="list-style-type: none"><li>▶ Modified: <b>Device Settings</b> screenshot/descriptions</li><li>▶ Modified: <b>Tools Menu</b> screenshot/descriptions</li><li>▶ Added: <b>Tools Menu</b> – RF Band screenshot/description</li><li>▶ Modified: <b>Chapter 1</b> screenshot</li><li>▶ Modified: <b>2.1</b> screenshot</li><li>▶ Modified: <b>Chapter 3</b> screenshot</li><li>▶ Modified: <b>Chapter 4</b> screenshot</li><li>▶ New: <b>Chapter 5</b></li><li>▶ Added: <b>Chapter 6</b> – RF Band Setting Failure</li></ul>
1.01	Nov. 12, 2012	1800Configuration utility v1.03 updated <ul style="list-style-type: none"><li>▶ “Tools” drop-down menu updated with new functions</li><li>▶ “Data Output via USB” checkbox on the Operation tab added</li><li>▶ Related screenshots updated</li></ul>
1.00	Sep. 18, 2012	Initial Release

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# INTRODUCTION

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1800Configuration is a utility that enables you to configure the CipherLab RFID Reader easily via host computer. It provides two major functions: (1) Configure the settings you want to use with the readers and (2) Get the settings from the reader.

This user guide contains information on using 1800Configuration. We recommend that you read it thoroughly before use and keep it at hand for quick reference.

Thank you for choosing CipherLab products!


## SYSTEM REQUIREMENTS

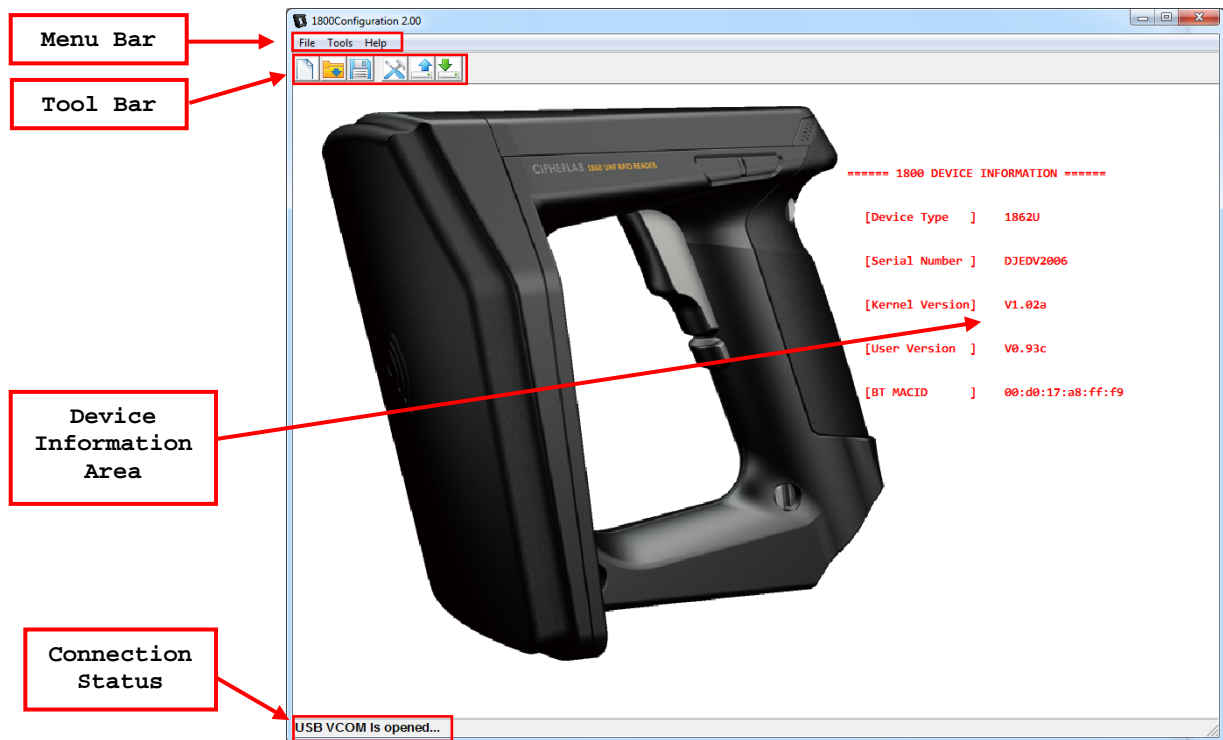
To run the 1800Configuration, one of the Windows operating systems is required:

- ▶ Windows 2000
- ▶ Windows XP
- ▶ Windows Vista
- ▶ Windows 7

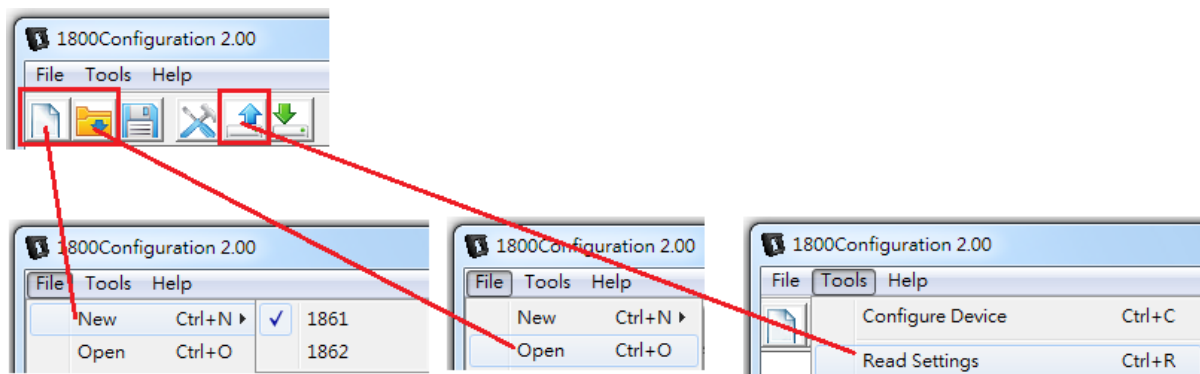
## USING 1800CONFIGURATION




Five procedures are needed to do the setup via 1800Configuration.

- 1) Double click the 1800Configuration icon (  **1800Configuraton.exe**) to run 1800Configuration Utility as shown below:




- 2) The configuration can be done by **New**, **Open**, and **Read Settings**.

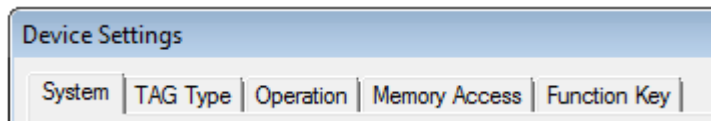


- ▶ Click  or  on the toolbar to create a new configuration file.
- ▶ Click  on the toolbar to open an existing configuration.

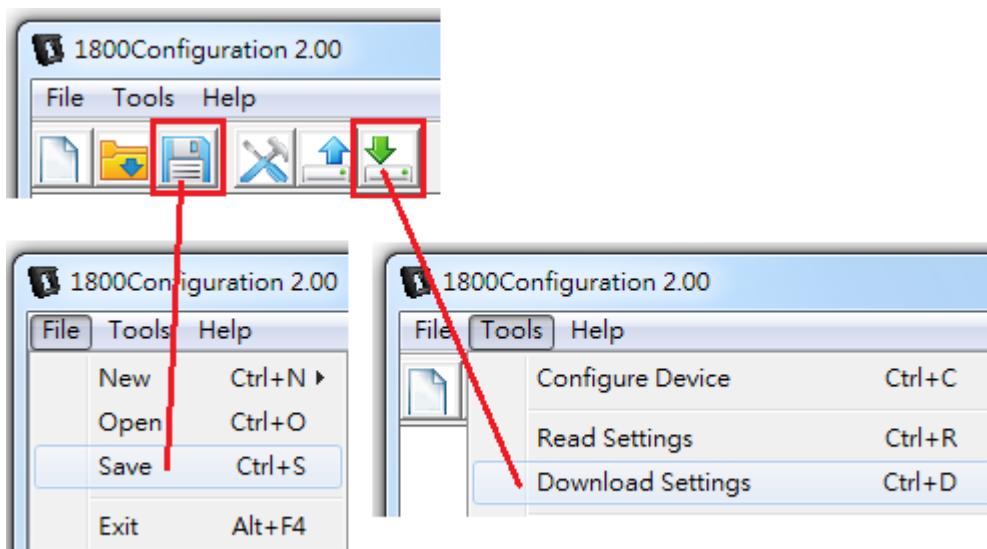


- ▶ Click  to read the configurations from the source reader connected to the host computer via Virtual COM (*Bluetooth*® SPP or USB VCOM).

3) There are four tabs on the **Device Settings** window.



- a. **System:** Configure system related settings and connection interface on the **System** tab; please refer to [Chapter 1](#).
  - b. **TAG Type:** Activate the TAG types on the **TAG Type** tab; refer to [Chapter 2](#).
  - c. **Operation:** Select Scan Mode and define the data output format on the **Operation** tab; please refer to [Chapter 3](#).
  - d. **Memory Access:** Read and write tag memory banks. Please refer to [Chapter 4](#).
- 4) After the configurations are completed, you can save or download the settings. If the reader is connected to the host computer via Virtual COM (*Bluetooth*® SPP or USB VCOM), you can directly download the settings to the reader.



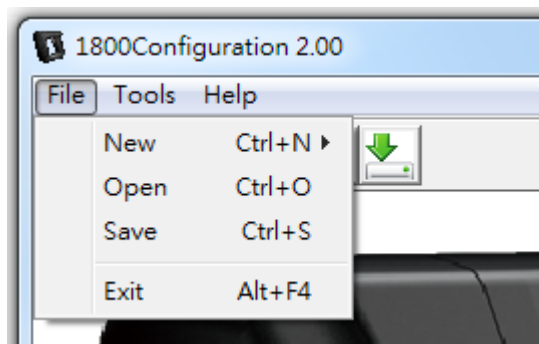
Note: If you are using USB Virtual COM for the first time, you must install its driver from the CD-ROM.

- 5) After the reader is configured successfully, make the connection with the host device via a proper interface: *Bluetooth*® HID, *Bluetooth*® SPP or 3610.

## FILE MENU

The menu bar contains a number of menus that cause the program to take actions. Each menu contains a list of items. The selected item needs further configuration window when the item is labelled with an ellipsis [...]; otherwise it deals with an action that is carried out immediately.

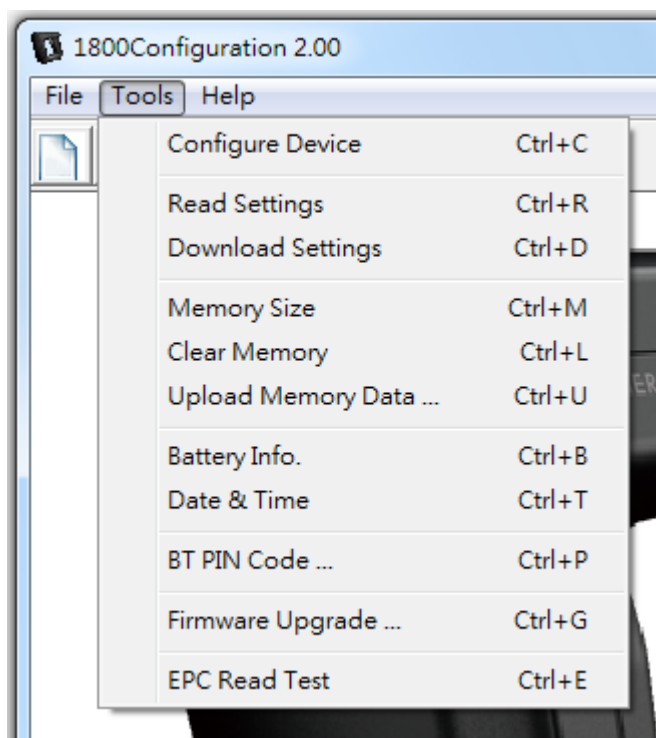
The File Menu contains the items that process the actions as tabulated below:



Item	Action
<i>New</i>	Create a new configuration file.
<i>Open</i>	Open an existing configuration file. File path needs to be specified.
<i>Save</i>	Save the current settings.
<i>Exit</i>	Close the 1800Configuration Utility.

## TOOLS MENU

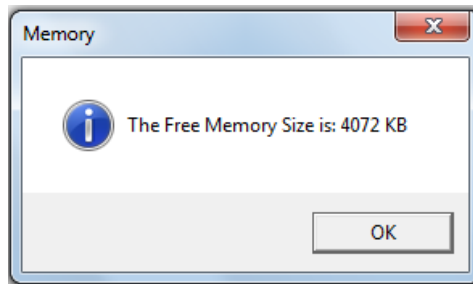
The Tools Menu displays the settings and information items as tabulated below:



Item	Action
<i>Configure Device</i>	<p>Configure the current settings for the target reader.</p> <p>Refer to the following sections –</p> <ul style="list-style-type: none"> <li>▶ <a href="#">Chapter 1 – Changing System Settings</a></li> <li>▶ <a href="#">Chapter 2 – Selecting TAG Types</a></li> <li>▶ <a href="#">Chapter 3 – Beginning Operations</a></li> <li>▶ <a href="#">Chapter 4 - Memory Access</a></li> </ul>
<i>Read Settings</i>	<p>Click this item to fetch the current settings applied on the reader. After reading with success, the Device Settings window shows up displaying detail information of the current settings.</p>
<p>Note: To clone settings, first read settings from a specific reader, and then send the settings to other readers.</p>	
<i>Download Settings</i>	<p>Click this item to send the settings made in the 1800Configuration to the target reader when the reader is connected to the host computer via Virtual COM (<i>Bluetooth</i>® SPP or USB VCOM).</p>

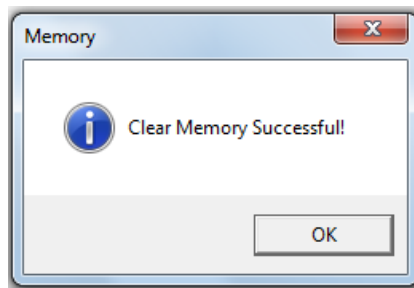
### *Memory Size*

Click this item to get memory size information of the reader via Virtual COM (*Bluetooth*® SPP or USB VCOM).



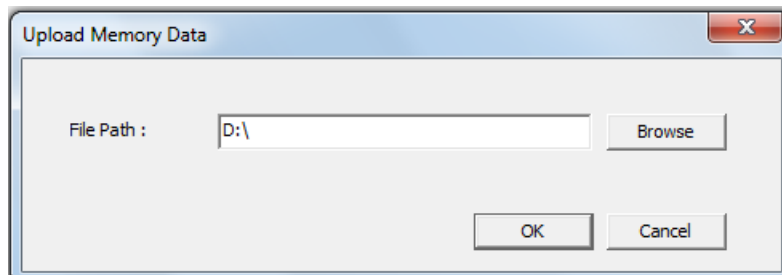
### *Clear Memory*

Click this item to clear the present memory via Virtual COM (*Bluetooth*® SPP or USB VCOM).

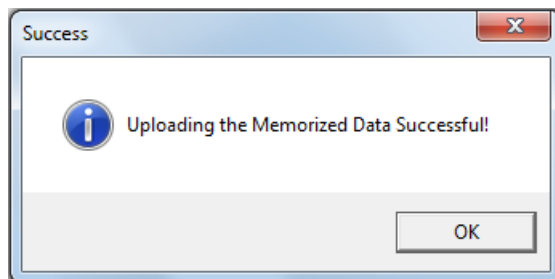


### *Upload Memory Data*

This function allows users to upload memory data to the host computer. Click this item to bring up the [Upload Memory Data] dialog box. Save the memory data according to default path or click "**Browse**" to select another location.

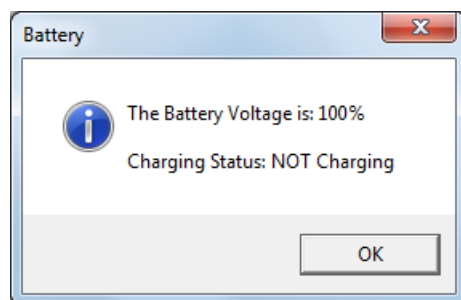


When the memory data is saved (uploaded), a dialog box will show up.

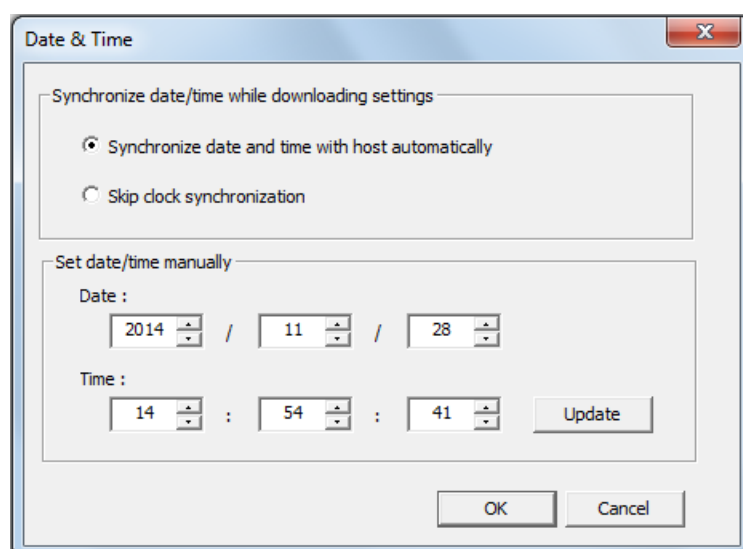


*Battery Info*

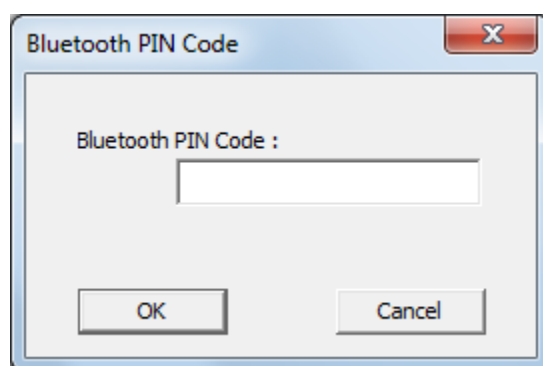
Click this item to get the reader battery information via Virtual COM (*Bluetooth*<sup>®</sup> SPP or USB VCOM).

*Date & Time*

By default, date/time synchronization between 1800 and the host computer will be performed during settings download. Users can determine not to perform the synchronization. Besides, 1800 date/time can also be manually set here.

*BT PIN Code*

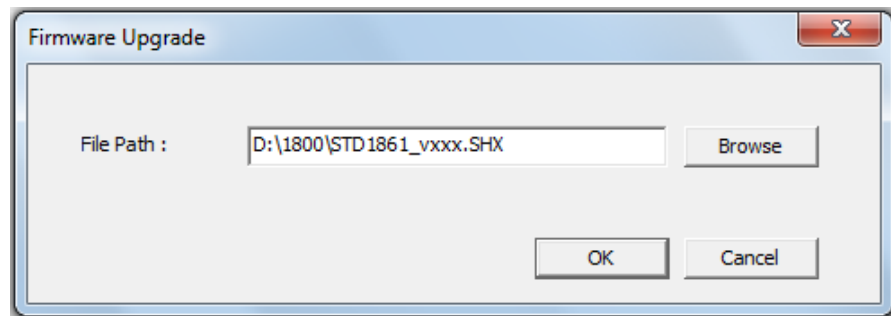
The [Bluetooth PIN Code] dialog box enables you to input proper *Bluetooth*<sup>®</sup> PIN Code during pairing.



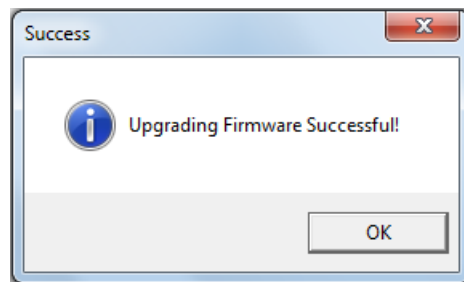
Note: The reader allows up to 16 characters for a PIN code. If the PIN or passkey is incorrect, any connection request will be rejected by the reader. By default, the PIN code value is "0000".

### *Firmware Update*

This function allows users to upgrade firmware for the RFID reader. Click this item to bring up the [Firmware Upgrade] dialog box. Type the file path in the field or click "**Browse**" to locate the firmware file.

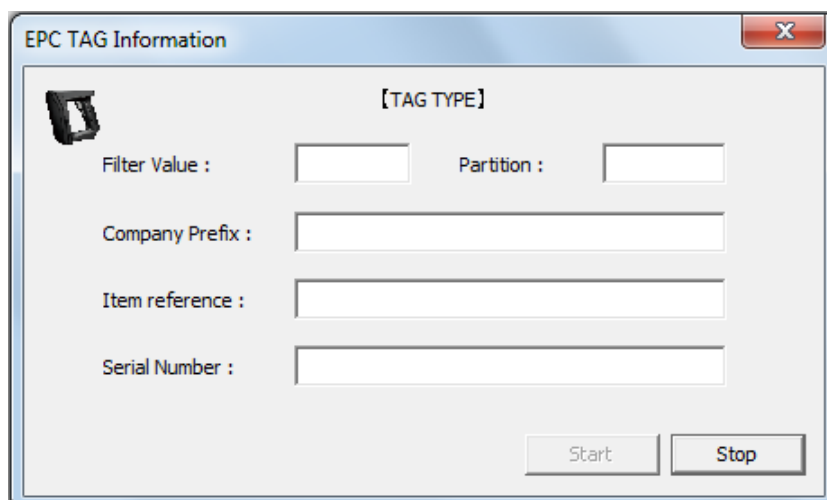


After upgrading, a dialog box will show up.



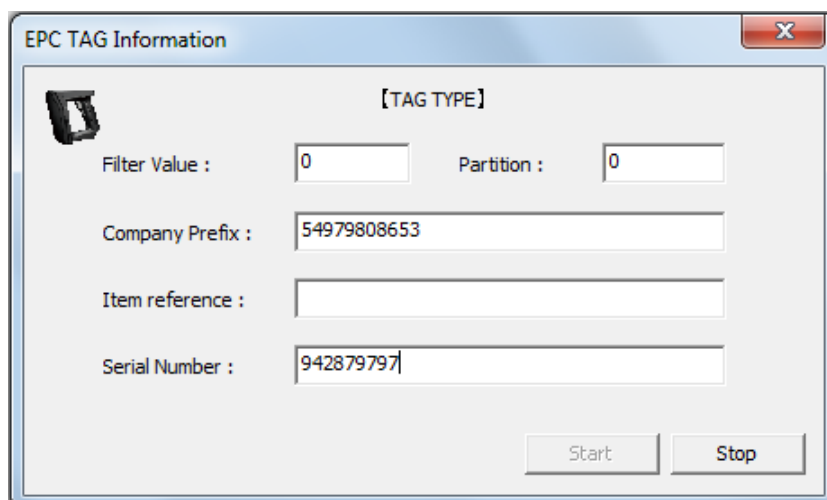
*EPC Read Test*

Users are able to view the EPC tag data after each reading by running this function. Click this item to bring up the [EPC TAG Information] dialog box.



The dialog box is titled "EPC TAG Information" and features a close button (X) in the top right corner. On the left, there is a small icon of an EPC tag. To the right of the icon is the label "[TAG TYPE]". Below this, there are four input fields: "Filter Value :", "Partition :", "Company Prefix :", and "Serial Number :". The "Filter Value" and "Partition" fields are small, while the others are larger. At the bottom right, there are two buttons: "Start" and "Stop".

After reading with success, the tag information will be displayed.



This dialog box is identical to the one above, but it contains data. The "Filter Value" field contains "0", the "Partition" field contains "0", the "Company Prefix" field contains "54979808653", and the "Serial Number" field contains "942879797". The "Start" and "Stop" buttons are still present at the bottom right.

Note: This function supports packet data only. The Start button appears in grey indicating the utility is waiting for receiving packet data.

## USB VCOM INFORMATION

The status of USB connection between the reader and host computer will appear on the lower left bottom of the main window.

The status message displays as follows when the USB cable is not connected.

**USB VCOM Is closed...**

The status message displays as follows when the USB cable is connected.

**USB VCOM Is opened...**

---

Note: Make sure the USB cable is properly wired before establishing a USB VCOM connection.

---

## SYSTEM INFORMATION

With each successful configuration (download/read the settings, upload/clear memory and get memory size) on the reader via 1800Configuration running on the host computer, the 1800 RFID Reader will respond with a beep and system information will be displayed on the main screen of the application.

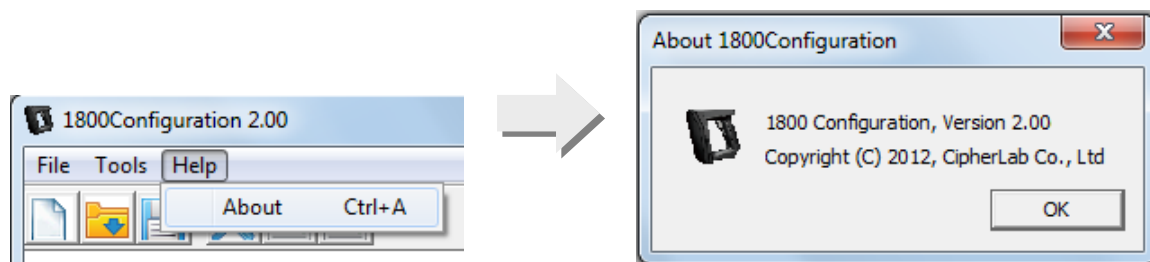
### ----- 1800 DEVICE INFORMATION -----

[Device Type ]	1862U
[Serial Number ]	DJEDV2006
[Kernel Version]	V1.02
[User Version ]	V1.03
[BT MACID ]	00:d0:17:a8:ff:f9



## HELP MENU

Click the **About** item or press **Ctrl+A** combination keys to check application information.









Item	Action
About	Provides the information about the version, copyright and developer of the 1800Configuration.

## TOOLBAR

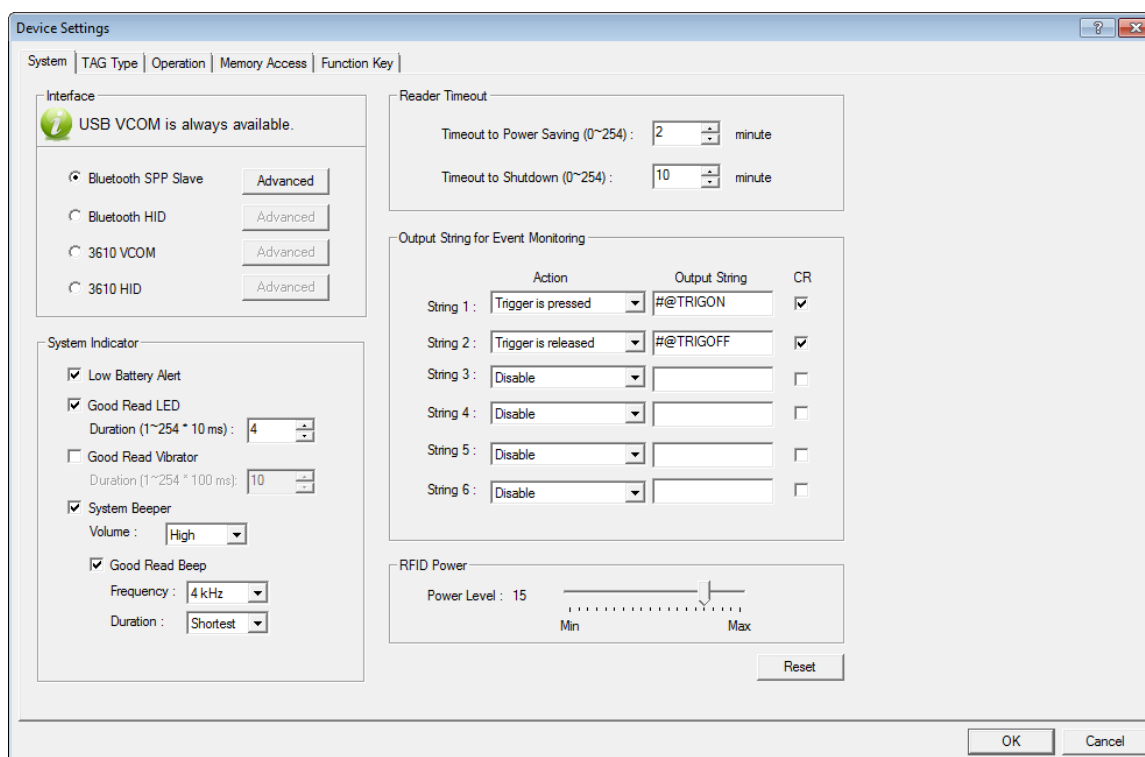
The icons on the toolbar are specified for shortcuts to most of the actions as below:



The icons from left to right are specified with following actions:		
		▶ New
		▶ Open
		▶ Save
		▶ Configure
		▶ Read settings from 1800 Reader
		▶ Download settings to 1800 Reader

## CHANGING SYSTEM SETTINGS

Featuring a number of tabbed property pages the [Device Settings] window enables you to optimize the configuration for your application.



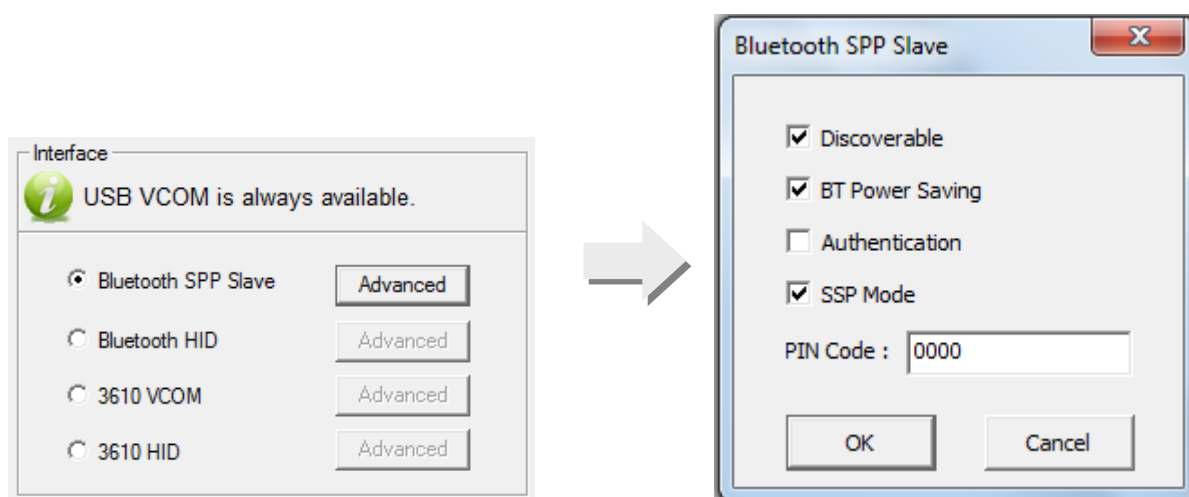
Reader	Interface
1800	Bluetooth® SPP Slave (Default)
	Bluetooth® HID
	3610 VCOM (USB VCOM via 3610)
	3610 HID (USB HID via 3610)

Note: 1800Configuration Utility will log the used COM port information into a file (with the .ini filename extension) for next pre-setting usage.

## IN THIS CHAPTER

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### 1.1 *BLUETOOTH*<sup>®</sup> SPP SLAVE



#### 1.1.1 DISCOVERABLE

The Discoverable checkbox is ticked by default for device name discovery. Deselect it to hide the reader from other *Bluetooth*<sup>®</sup>-enabled devices. However, discoverable must be enabled to establish an initial connection with other *Bluetooth*<sup>®</sup>-enabled devices.

For example, you can disable Discoverable after successfully connecting the reader to WorkStation 1. Such connection will be maintained automatically unless the reader is removed from the paired device list (called unpairing) by WorkStation 1 or any changes made to authentication and the PIN code. If you want WorkStation 2 to connect to the reader, you have to enable discoverable so that Workstation 2 can find the reader.

Note: Device Name Discoverable is selected by default as it is required for initial connection.

### 1.1.2 BT POWER SAVING

When this option is selected, the reader will go to power saving mode when idle.

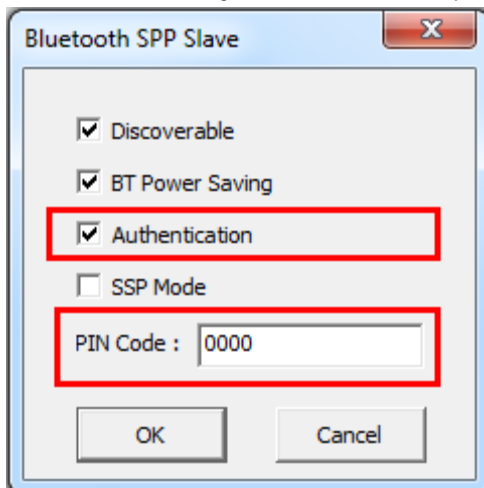
Note: When connecting more than two readers to a notebook computer with *Bluetooth*® wireless technology, we suggest that you disable the power-saving setting for a more reliable connection.

### 1.1.3 AUTHENTICATION

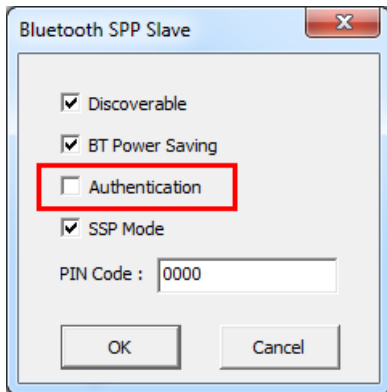
When any changes are made to the authentication and PIN code on the reader, you have to remove the reader from the paired device list (called unpairing) and go through the whole process to re-establish the connection. The reader allows up to 16 characters for a PIN code and provides two options for authentication:

#### Enable 1800 Authentication with Preset PIN

Select the “Authentication” checkbox, and enter a set of PIN code into the “PIN Code” field as the preset PIN. If the host computer attempts to connect to the reader, the PIN or passkey must be correct. If not, any connection attempt will be turned down by the reader.

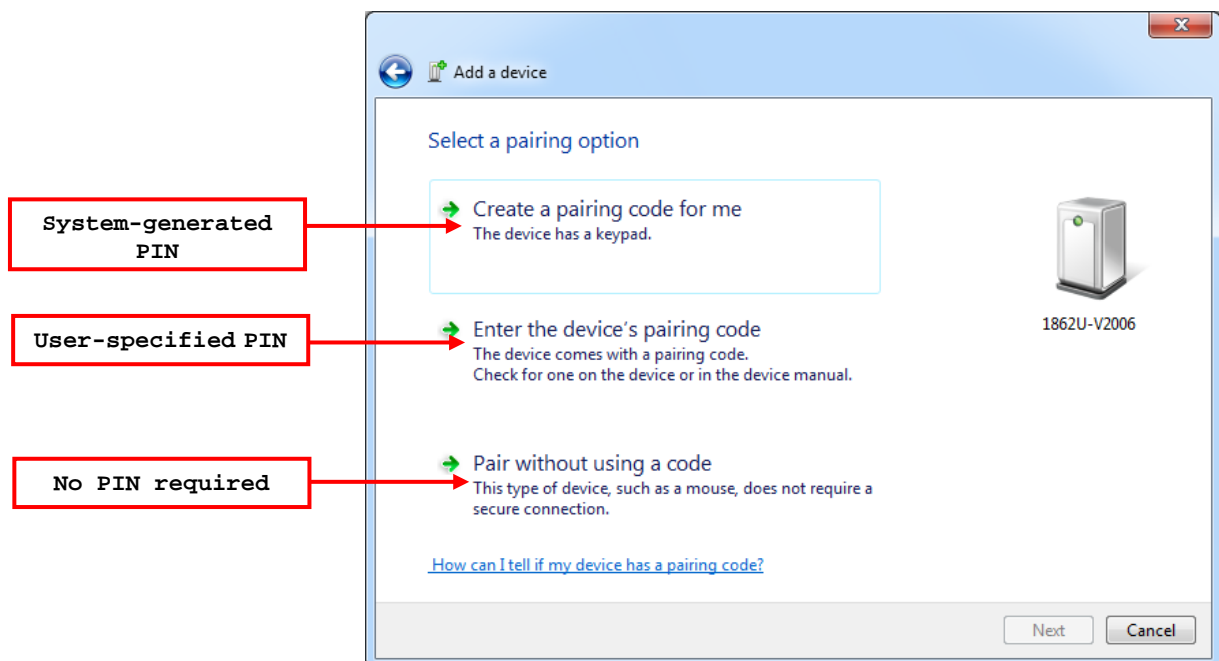


## Pairing with System-generated/User-specified PIN or No pairing PIN



For pairing without 1800 authentication (as the picture illustrated above), you can connect to 1800 in three ways:

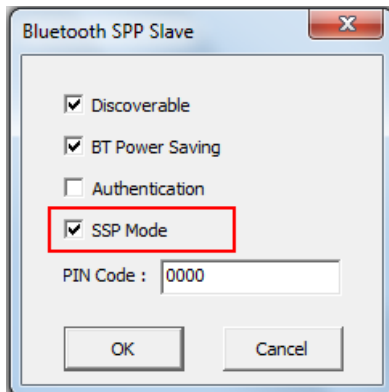
- ▶ **System-generated pairing PIN:**  
As the picture illustrated below, click the rectangle area to have the system automatically generate a random PIN code for pairing.
- ▶ **User-specified pairing PIN:**  
By clicking the rectangle area, a dialog will show up prompting users to specify the PIN code.
- ▶ **No pairing PIN:**  
With this option selected, the connection between your computer and 1800 is established immediately without any PIN code.



While pairing via System-generated or User-specified PIN option, a window requesting the PIN code will display on the host computer screen. Input the matching PIN Code via the 1800 RFID trigger and function keys; please refer to 1800 Reference Manual for further details.

### 1.1.4 SSP MODE

Secure Simple Pairing (SSP) is to make *Bluetooth*® devices easier to use and more secure. The SSP checkbox is ticked by default to enable the connection of the reader to the host device without the need for PIN code or Passkey.



---

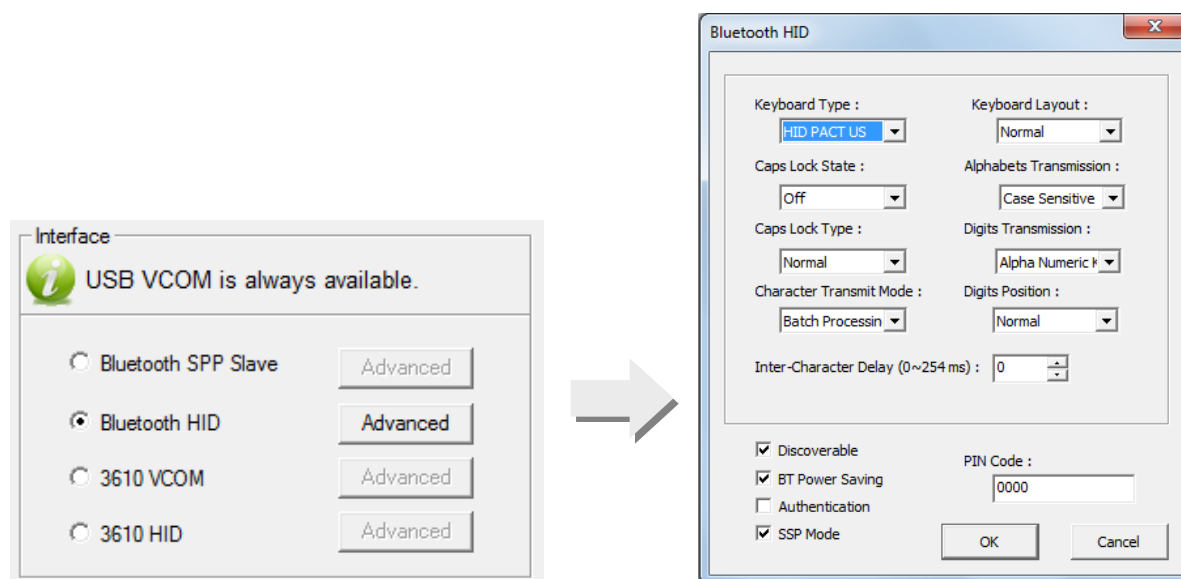
Note: SSP Feature is only for iOS currently.

---

## 1.2 BLUETOOTH® HID

In this mode, re-connection is made easy and reliable, just like connecting with 3610. As a HID device, the reader will resume connection with the host upon powering on again, as long as the host application is running. You will hear three short beeps with tone ascending from low to high. If the reader fails to resume connection, it will try every 5 seconds to re-connect to the host unless you change the interface to others and download settings to the reader.

Note: To stop the reader from automatically reconnecting, you can disconnect the current connection directly, reset the connection, or load default settings. For more information, please refer to 1800 Reference Manual.



### 1.2.1 KEYBOARD TYPE

By default, the keyboard type is set to PCAT (US). The following keyboard types are supported –

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	71	PCAT (Belgium)
65	PCAT (French)	72	PCAT (Spanish)
66	PCAT (German)	73	PCAT (Portuguese)
67	PCAT (Italy)	74	PS55 A01-2 (Japanese)
68	PCAT (Swedish)	76	PCAT (Turkish)
69	PCAT (Norwegian)	77	PCAT (Hungarian)
70	PCAT (UK)		

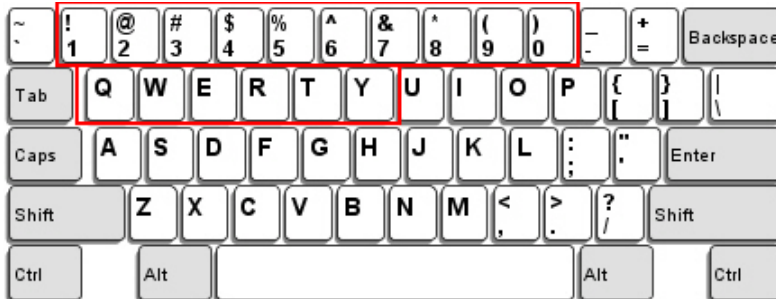


## 1.2.2 KEYBOARD LAYOUT

By default, the Keyboard Layout is set to Normal mode, also known as the standard English layout. Select French or German keyboard layout if necessary. The reader will make adjustments when sending the "A", "Q", "W", "Z", "Y", and "M" characters according to this setting.

### US Keyboard Layout – Normal

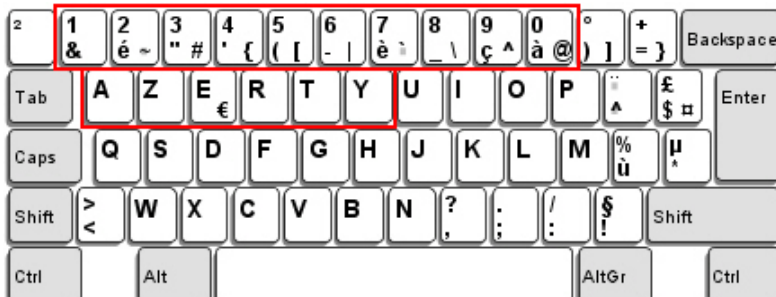
QWERTY layout, which is normally used in western countries.



- ▶ Select "Lower Row" for the "Digits Position" setting for the upper row is for special characters.

### French Keyboard Layout – AZERTY

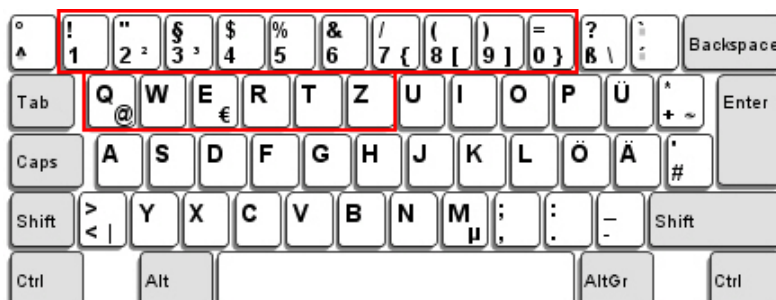
French layout; see below for French Keyboard Style.



- ▶ Select "Upper Row" for the "Digits Position" setting for the lower row is for special characters.

### German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



- ▶ Select "Lower Row" for the "Digits Position" setting for the upper row is for special characters.

Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US). The Keyboard Layout and Digits Position settings must match your keyboard.

### 1.2.3 DIGITS POSITION

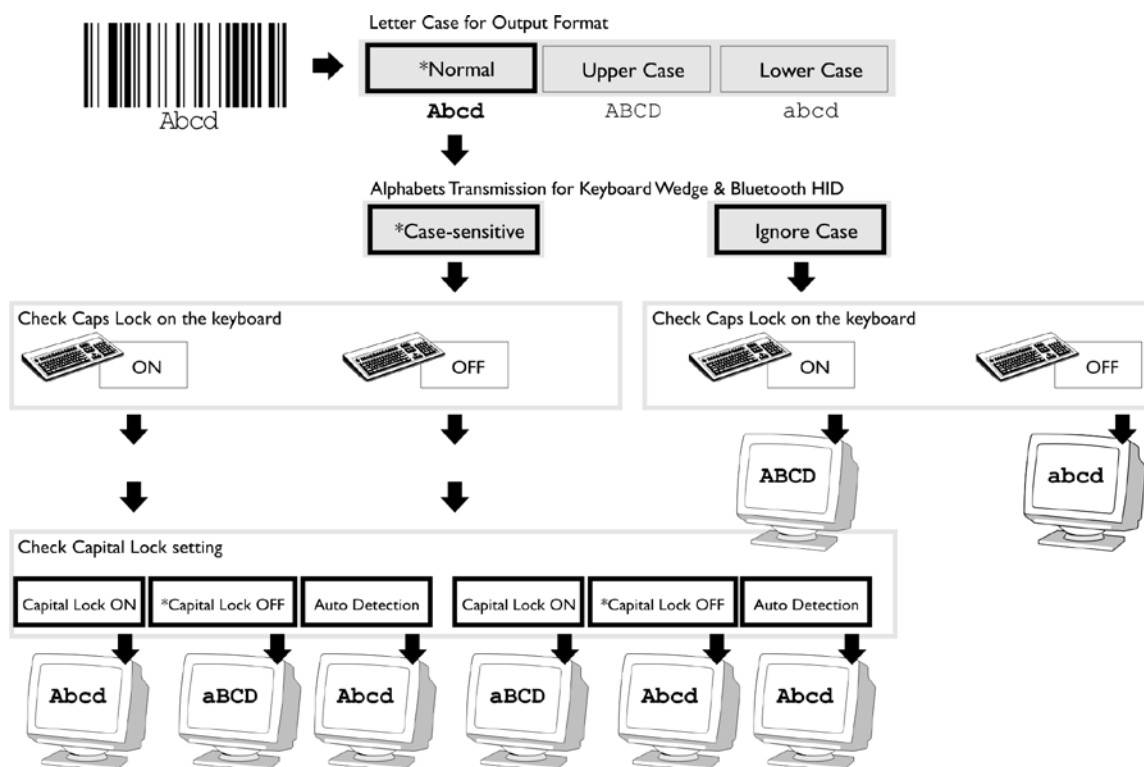
Select a proper Digits Position that matches the Keyboard Layout. The reader will make adjustments according to this setting.

Options	Description
<i>Normal</i>	Depends on the [Shift] key or [Shift Lock] setting
<i>Lower Row</i>	For QWERTY and QWERTZ keyboards
<i>Upper Row</i>	For AZERTY keyboards

Note: This setting is meant to be used with the Alphabets Keyboard, and perhaps the Character Substitution setting when support to certain keyboard types (languages) is unavailable but required.

### 1.2.4 ALPHABETS TRANSMISSION

By default, the alphabets transmission is case-sensitive, meaning that the alphabets will be transmitted according to their original case, the status of Caps Lock on the keyboard, as well as the Capital Lock setting. Select [Ignore Case] to have alphabets transmitted according to the status of Caps Lock on the keyboard only.



### 1.2.5 DIGITS TRANSMISSION

By default, the alphanumeric keypad is used for transmitting digits. Select "Numeric Keypad" if you wish to use the keys on the numeric keypad.



Note: If you select "Numeric Keypad", the Num Lock status of the physical keyboard should be "ON".

### 1.2.6 CAPS LOCK TYPE

Caps Lock Type	Description
<i>Normal</i>	Normal type
<i>Caps Lock</i>	When enabled, the keys of alphabetic characters will be interpreted as capital letters. However, this does not affect the number or punctuation keys.
<i>Shift Lock</i>	When enabled, the keys of alphabetic characters will be interpreted as capital letters. In addition, this affects the number or punctuation keys.

### 1.2.7 CAPS LOCK STATE

In order to send the alphabets with correct case, the reader needs to know the status of Caps Lock on the keyboard. Incorrect settings may result in reversed case of the alphabets being transmitted.

Caps Lock State	Description
<i>Off</i>	Assuming that the status of Caps Lock on the keyboard is Off, transmitted characters are exactly the same as in the tag (when "case-sensitive" is selected for Alphabets Transmission).
<i>On</i>	Assuming that the status of Caps Lock on the keyboard is On, transmitted characters are exactly the same as in the tag (when "case-sensitive" is selected for Alphabets Transmission). ▶ Refer to the Capital Lock Type above.

<i>Auto</i>	The reader will automatically detect the status of Caps Lock on the keyboard before data is transmitted; transmitted characters are exactly the same as in the tag (when "case-sensitive" is selected for Alphabets Transmission).
-------------	--

## 1.2.8 CHARACTER TRANSMIT MODE

By default, HID interface sends data to the host by batch. You may change it to process data one character at a time.

## 1.2.9 INTER-CHARACTER DELAY

By default, the inter-character delay is set to zero. Enter a value, ranging from 0 to 254 in milliseconds, to match the host computer response time of the keyboard interface. Such delay time is inserted between every character being transmitted. The longer the delay time is, the slower the transmission speed will be.

## 1.2.10 DISCOVERABLE

The reader can be configured to hide itself from other devices equipped with *Bluetooth*<sup>®</sup> wireless technology. Simply disable the device name discovery setting so that it won't be found out by any other computer. However, "Discoverable" check box must be enabled to establish an initial connection with the reader.

For example, you can disable Discoverable after successfully connecting the reader to WorkStation 1. Such connection will be maintained automatically unless the reader is removed from the paired device list (called unpairing) by WorkStation 1 or any changes made to authentication and the PIN code. If you want WorkStation 2 to connect to the reader, you will have to enable Discoverable, so that WorkStation 2 can find the reader.

---

Note: By default, the Discoverable function is enabled for initial connection.

---

## 1.2.11 BT POWER SAVING

When this option is selected, the reader will go to power saving mode when idle.

---

Note: When connecting more than two readers to a notebook computer with *Bluetooth*<sup>®</sup> wireless technology, we suggest that you disable the power-saving setting for a more reliable connection.

---

## 1.2.12 AUTHENTICATION

When any changes are made to authentication and PIN code on the reader, you will have to remove the 1800 RFID Reader from the paired device list (called unpairing) and go through the whole process to re-establish the connection.

The reader allows up to 16 characters for a PIN code and provides two options for authentication:

#### Enable 1800 Authentication with Preset PIN

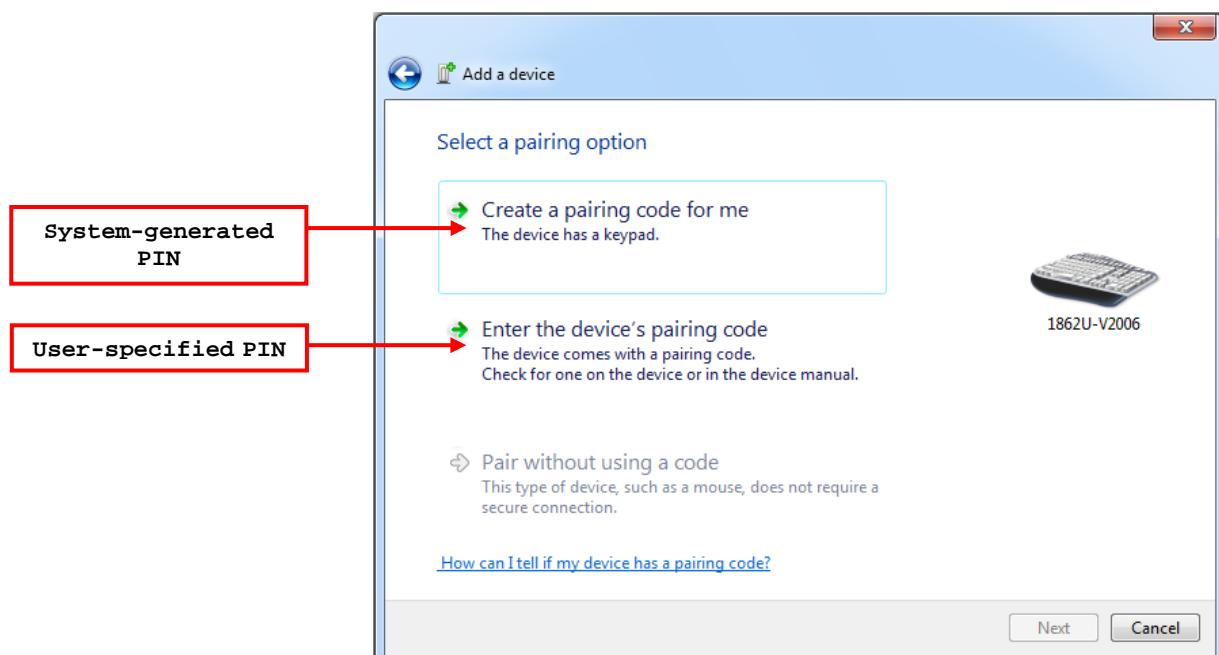
Select the check box of “Authentication”, and enter exactly the same string in the “PIN Code” field as the preset PIN for host computer to connect to the reader. If the PIN or passkey is incorrect, any connection attempt will be turned down by the reader.

#### Pairing with System-generated/User-specified PIN

For pairing without 1800 authentication (as the picture illustrated above), you can connect to 1800 in two ways:

- ▶ System-generated pairing PIN:

As the picture illustrated below, click the rectangle area to have the system automatically generate a random PIN code for pairing.



► User-specified pairing PIN:

By clicking the rectangle area, a dialog will show up prompting users to specify the PIN code.

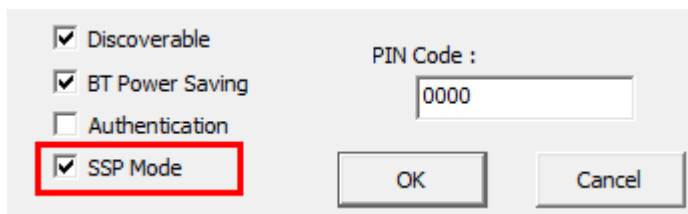
---

Note: When using *Bluetooth*<sup>®</sup> HID, some device driver may not support pre-defined PIN code for authentication. In this case, make sure you cancel the checkbox of "Authentication" to set the reader to "System-generated PIN" or "User-specified PIN" before pairing. While pairing, a window requesting the PIN code will display on the host computer screen. Input the matching PIN Code via the 1800 RFID trigger and function keys; please refer to 1800 Reference Manual for further details.

---

### 1.2.13 SSP MODE

Secure Simple Pairing (SSP) is to make *Bluetooth*<sup>®</sup> devices easier to use and more secure. The SSP checkbox is ticked by default to enable the connection of the reader to the host device without the need for PIN code or Passkey.

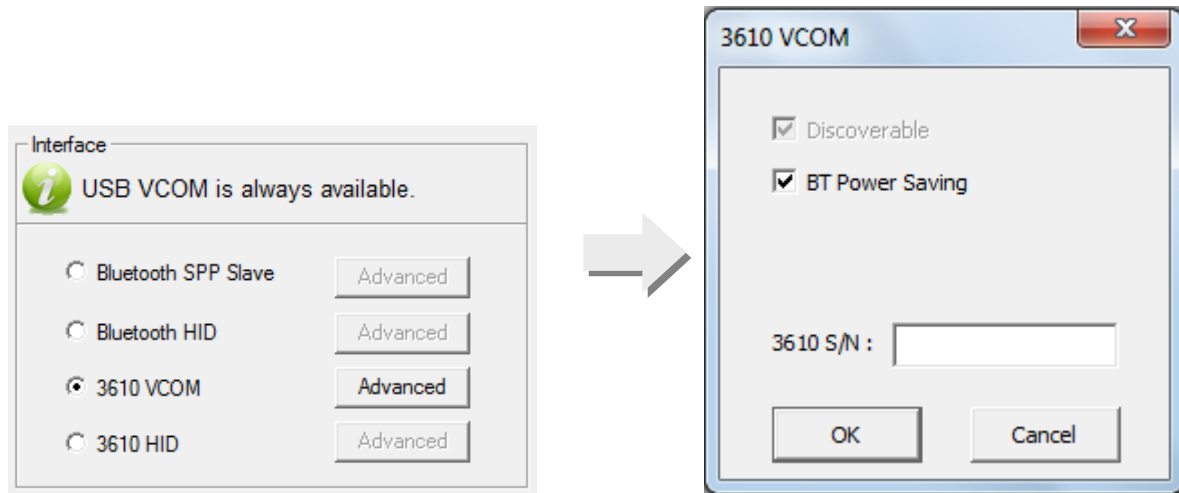


---

Note: SSP Feature is only for iOS currently.

---

### 1.3 3610 VCOM (USB VCOM VIA 3610)



Note: If you are using USB Virtual COM for the first time, you must install its driver from the CD-ROM. Driver version 5.4 or later is required. Please remove older versions first before installing a new driver.

#### 1.3.1 BT POWER SAVING

When this option is selected, the reader will go to power saving mode when idle.

Note: When connecting more than two readers to a notebook computer with *Bluetooth*<sup>®</sup> wireless technology, we suggest that you disable the power-saving setting for a more reliable connection.

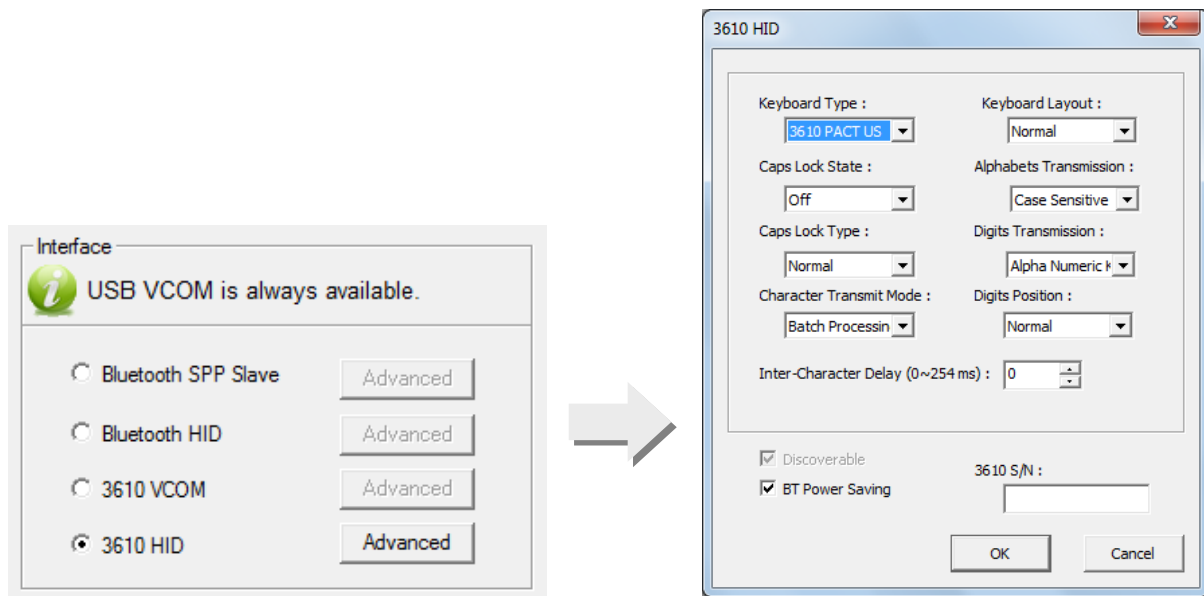
#### 1.3.2 3610 S/N

Click the field of 3610 S/N to enter the serial number of 3610 that you want to connect to.

## 1.4 3610 HID (USB HID VIA 3610)

Some of configurations in this mode are similar to connecting with *Bluetooth*® HID and SPP Master. For Keyboard related configurations, refer to [1.1 Bluetooth® SPP Slave](#).

Note: To stop the reader from automatically reconnecting, you can disconnect the current connection directly, reset the connection, or load default settings. For more information, please refer to 1800 Reference Manual.



### How to connect with the 3610?

A parameter for connecting the 3610 is required.

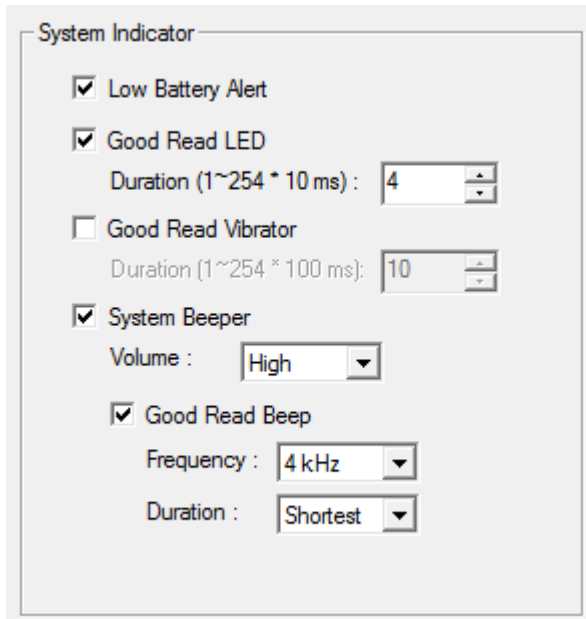
- ▶ The Serial Number of 3610

Usage:

- ▶ Enter the serial number of 3610 in the "3610 S/N" field.
- ▶ Click [OK] to complete all the settings.
- ▶ Download the settings to the reader.



## 1.5 SYSTEM INDICATOR



The screenshot shows a window titled "System Indicator" with the following settings:

- ☒ Low Battery Alert
- ☒ Good Read LED
  - Duration (1~254 \* 10 ms): 4
- ☐ Good Read Vibrator
  - Duration (1~254 \* 100 ms): 10
- ☒ System Beeper
  - Volume: High
- ☒ Good Read Beep
  - Frequency: 4 kHz
  - Duration: Shortest

### 1.5.1 LOW BATTERY ALERT

By default, the low battery alert is enabled. In order to prevent data loss, it is advised to replace the battery immediately when hearing two short beeps (high tone).

### 1.5.2 GOOD READ LED

By default, Good Read LED is enabled and its duration is set to 40 milliseconds. Enter a value ranging from 1 to 254 in units of 10 milliseconds. When reading a tag successfully, the LED3 on the reader will become solid green and go off.

### 1.5.3 GOOD READ VIBRATOR

The reader is equipped with a vibrator. You may enable it for Good Read indication. When enabled, it vibrates for 1 second. Specify a value, ranging from 1 to 254, in units of 100 milliseconds. By default, this function is disabled.

### 1.5.4 SYTEM BEEPER

The beeper is used to alert users of various states of the reader, such as Good Read, buffer full status, configuration status, etc. Select a suitable volume.

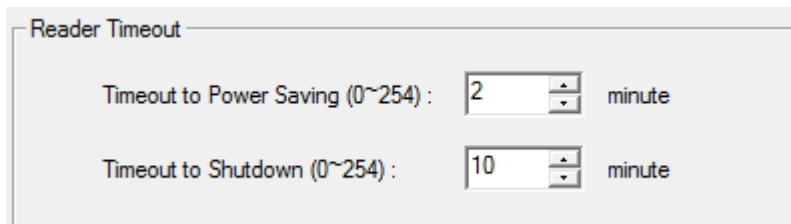
### 1.5.5 GOOD READ BEEP

By default, Good Read Beep is set to enable. Beeper frequency is 4 KHz and duration is shortest. Select a different frequency and duration if necessary.

## 1.6 READER TIMEOUT

The reader will go through two phases of power consumption and operations:

- 1) The reader stays active from power-on at full power.
- 2) The reader shifts to Power Saving Mode. ("Sys. Power Saving". See [1.6.1 Sys. Power Saving.](#))
- 3) The reader finally shuts down. ("Auto Power Off". See [1.6.2 Shutdown.](#))



The screenshot shows a configuration window titled "Reader Timeout". It contains two settings, each with a numeric input field and a unit label "minute". The first setting is "Timeout to Power Saving (0~254) :" with a value of "2". The second setting is "Timeout to Shutdown (0~254) :" with a value of "10".

Setting	Value	Unit
Timeout to Power Saving (0~254) :	2	minute
Timeout to Shutdown (0~254) :	10	minute

### 1.6.1 SYS. POWER SAVING

Power Saving (1~254 min.; 0= Disable): By default, it is set to idle for 2 minutes before it enters power saving mode. If this feature is not desired, set it to 0.

Note either of the following cases will render this setting ineffective.

- 1) 1800 RFID Reader is in the configuration mode.
- 2) The 1800 RFID Reader is in Test Mode.
- 3) The setting value of Sys. Power Saving is greater than Auto Power Off.

### 1.6.2 SHUTDOWN

The setup of "Shutdown" time is available to any scan mode other than Test Mode.

Assign a time (1~254 min.; 0= Disable) to the "Timeout to Shutdown" item. If this feature is not desired, set it to zero. By default, the value is set to 10 minutes, which means the reader automatically shuts down when the reader has been idle for 10 minutes.

1.7 EVENT NOTIFICATION

You can define up to 6 output strings the reader can send out to notify of events that are monitored. Each string allows up to 10 characters with <CR> included. Combined with Function Keys and <Trigger>, there are 8 kinds of actions specified individually for each string. The defined setting in the Output String field has to correspond to the selected action from the drop-down menu.

Output String for Event Monitoring				Action
	Action	Output String	CR	
String 1 :	Trigger is pressed	#@TRIGON	<input checked="" type="checkbox"/>	Disable
String 2 :	Trigger is released	#@TRIGOFF	<input checked="" type="checkbox"/>	Trigger key is pressed
String 3 :	Disable		<input type="checkbox"/>	Trigger key is released
String 4 :	Disable		<input type="checkbox"/>	F1 is pressed
String 5 :	Disable		<input type="checkbox"/>	F1 is released
String 6 :	Disable		<input type="checkbox"/>	F2 is pressed
				F2 is released
				F1 + Trigger keys are pressed
				F2 + Trigger keys are pressed

Note: <CR> is specified for "Enter" on the normal keyboard.

1.8 RFID POWER

The greater value specified the stronger the signal is used.

1861: By default, the level is set to '3' for the strongest broadcast.

RFID Power

Power Level : 3

Min Max

1862: By default, the level is set to '15' for the strongest broadcast.

RFID Power

Power Level : 15

Min Max



SELECTING TAG TYPES

On the TAG Type tabbed page, 1800Configuration allows you to select TAG Types which can be scanned. You can click **“Select All”** to select all TAG Types. By default, all specified TAG Types are selected.

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2.1 TAG Types..... 31

2.1 TAG TYPES

System

TAG Type

Operation

Memory Access

Function Key

TAG Activation

☒ GDTI-96

☒ SGLN-96

☒ GRAI-170

☒ GSRN-96

☒ GRAI-96

☒ GIAI-202

☒ DoD-96

☒ GIAI-96

☒ SGLN-195

☒ SGTIN-96

☒ GID-96

☒ GDTI-113

☒ SSCC-96

☒ SGTIN-198

☒ ADI-var

Select All

Clear All

TAG Activation

- GDTI-96
- GSRN-96
- DoD-96
- SGTIN-96
- SSCC-96
- SGLN-96
- GRAI-96
- GIAI-96
- GID-96
- SGTIN-198
- GRAI-170
- GIAI-202
- SGLN-195
- GDTI-113
- ADI-var

You can class some Tag Type based on seven GS1 identification defined in the GS1 General Specifications as objects (GTIN), unique objects (SSCC, GLN, GIAI, GSRN), or a hybrid (GRAI, GDTI) that may identify either categories or unique objects depending on the absence or presence of a serial number.

The following table summarizes the EPC schemes defined in the specification and correspondence to GS1 Keys.

EPC Scheme	Tag Encodings	Corresponding GS1 Key	Typical Use
SGTIN	SGTIN-96 SGTIN-198	GTIN key (plus added serial number)	Trade item
SSCC	SSCC-96	SSCC	Pallet load or other logistics unit load
SGLN	SGLN-96 SGLN-195	GLN key (with or without additional extension)	Location
GRAI	GRAI-96 GRAI-170	GRAI (serial number mandatory)	Returnable/Reusable asset
GIAI	GIAI-96 GIAI-202	GIAI	Fixed asset
GDTI	GDTI-96 GDTI-113	GDTI (serial number mandatory)	Document
GSRN	GSRN-96	GSRN	Service relation (e.g., loyalty card)
GID	GID-96	[none]	Unspecified
DoD	DoD-96	[none]	US Dept of Defense supply chain
ADI	ADI-var	[none]	Aerospace and defense – aircraft and other parts and items

## BEGINNING OPERATIONS

The Operation tab enables you to define how to collect the data and the output format to use. You may configure the format in which the collected data will be output to the host computer. Operation mode of the reader will be processed in the following sequence –

- 1) Select Scan Mode
- 2) Configure Counter Section
- 3) Decide the Timestamp Section and Sequence
- 4) Add Prefix and Suffix before transmission: [Prefix][Processed Data][Suffix]
- 5) Decide the Output Format and Sequence

The screenshot shows the 'Device Settings' window with the 'Operation' tab selected. The window is divided into several sections:

- System | TAG Type | Operation | Memory Access | Function Key** (Tabs)
- Scan Mode:**
  - ☐ Single TAG Mode (Advanced)
  - ☒ Multi-TAG Mode (Advanced)
  - ☐ Test Mode
- Memory Data:**
  - ☐ Memory Mode
  - Memory Data Transmit Delay (ms): 0
- Output Format:**
  - Data Format: Raw Data
  - ☐ Transmission Buffer
  - Transmit Delay (ms): 0
  - Output Sequence: Counter, Timestamp, EPC Tag
  - ☐ Data Output via USB
- Counter:**
  - Prefix: [Text Box]
  - Suffix: [Text Box]
  - Left Padding Character: [space]
  - Reset Counter When:
    - ☐ UHF Power On
    - ☒ New Connection
- Timestamp:**
  - Prefix: [Space]
  - Suffix: [Space]
  - Timestamp Format: [Date][Time]
  - Date Format: yyyy-MM-dd
  - Time Format: hh:mm:ss
  - Timestamp Field Separator: [Space]
- EPC Tag:**
  - Prefix: [Text Box]
  - Suffix: [CR]
  - PC, EPC, CRC, Data (Buttons)
  - Length: [Text Box]
  - PC, EPC, CRC, Data (List Box)

Buttons: Reset, OK, Cancel

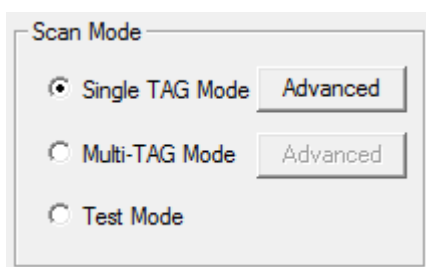
## IN THIS CHAPTER

---

3.1 Scan Mode .....	34
3.2 Memory Mode .....	54
3.3 Output Format .....	55
3.4 Counter .....	58
3.5 Timestamp .....	61
3.6 EPC Tag .....	62

### 3.1 SCAN MODE

A variety of scan modes are supported – select the scan mode that best suits the requirements of a specific application. Refer to the comparison table below.



- ▶ Single TAG Mode
- ▶ Multi-TAG Mode
- ▶ Test Mode

---

Note: The reader only accepts tags data up to maximum 4MB and transmit buffer for 2KB.

---

Scan Mode	Start to Scan		Stop Scanning			
	<i>Always</i>	<i>Press and Hold Trigger</i>	<i>Release Trigger</i>	<i>New Scan mode is set</i>	<i>Tag Read</i>	<i>is Timeout</i>
<i>Single TAG Mode</i>		✓	✓	✓	✓	✓
<i>Multi-TAG Mode</i>		✓	✓	✓		
<i>Test Mode</i>	✓			✓		

---

Note: By default, the Scan Mode is set to Single TAG Mode.

---



### Single Mode

---

Read Tag by pressing the trigger.

- ▶ Condition to start the operation: Press and hold the trigger.

Condition to stop the operation:

- ▶ A tag is read
- ▶ The trigger is released
- ▶ "Scan Session Timeout" expires while no Tag data is received

Release the trigger and press it again to start a new operation cycle. Scanning Timeout will be refreshed.

### Multi Tag Mode without Counter

---

Press and hold the trigger to read tags continuously. Repeated tags will be accepted.

- 1) Condition to start the operation: Press and hold the trigger.
- 2) Condition to stop the operation: The trigger is released.
- 3) Scanning speed is controlled by Scanning Delay.

### Multi Tag Mode with Counter

---

Press and hold the trigger to read tag continuously. Repeated tags will be ignored and new tag's EPC will be recorded; then counter is increased.

- 1) Condition to start/continue the operation: Press and hold the trigger.
- 2) Condition to suspend the operation: Release the trigger.
- 3) Condition to stop the operation:
  - ▶ The number of new tags read is equal to the Tag counter value.
  - ▶ New Multi-Tag Counter is set.
- 4) The counter of read tag can be reset by programming; please refer to 1800 Reference Manual.
- 5) Scanning speed is controlled by Scanning Delay.

### Test Mode

---

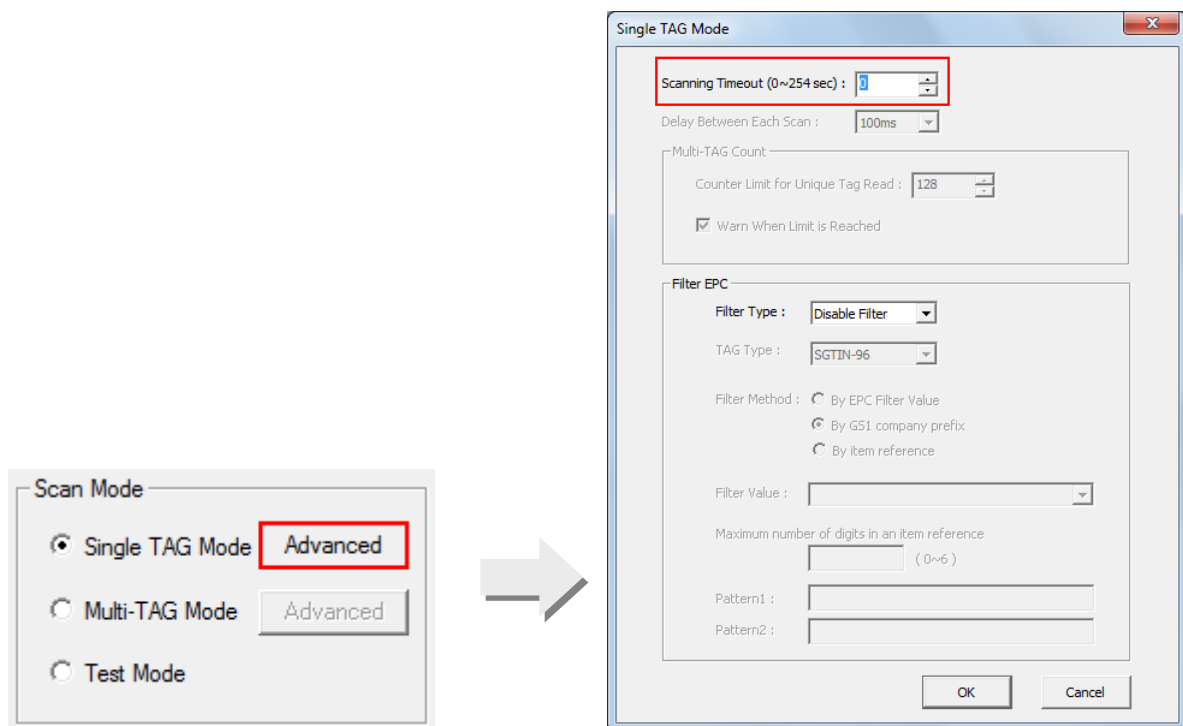
Read the tag continuously without pressing the trigger. Capable of decoding the same tag repeatedly for testing purpose.

- 1) Condition to start the operation: Scan mode is set to "Test mode".
- 2) Scan Session Timeout, Scanning Delay, Multi-Tag Counter and EPC filter parameters have no effect in this mode.

### 3.1.1 SCANNING TIMEOUT (SINGLE MODE)

You have to specify the scanning time interval (0~254 sec.; 0= Disable) when the scan mode is set to Single Mode.

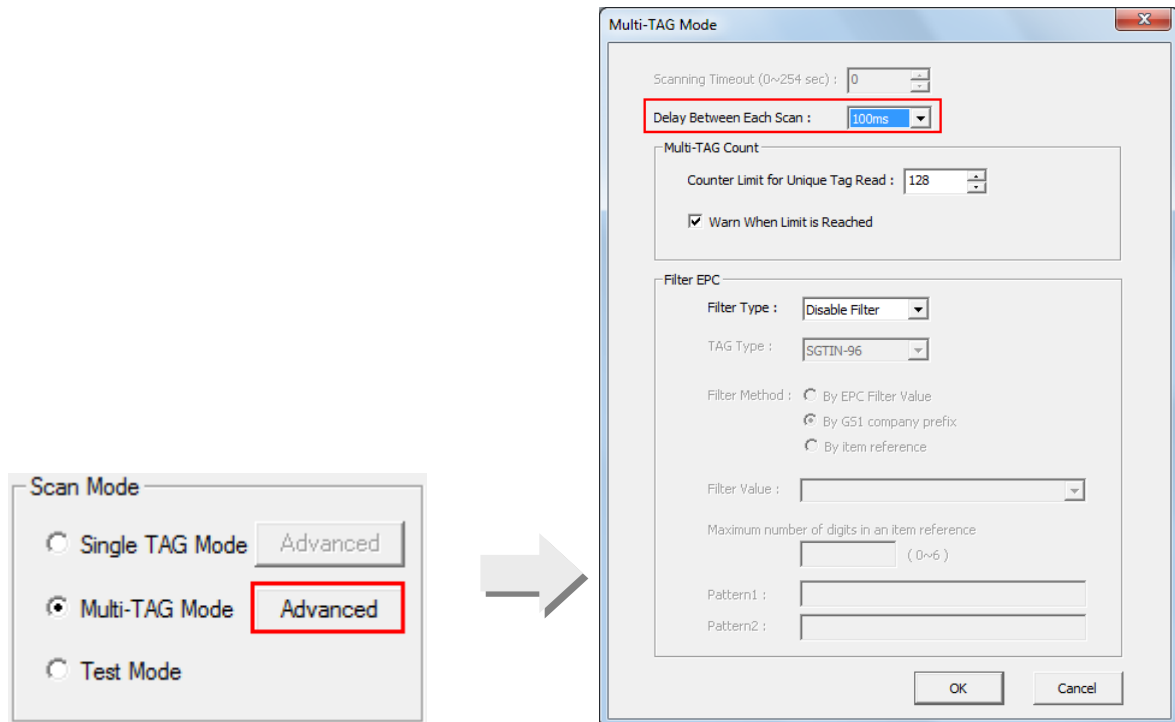
- 1) Operation will stop if the operation time equals Scan Session Timeout.
- 2) The range of timeout ranges from 0~254 in seconds. When the timeout is set to '0', the operation will not stop.
- 3) Operation time will not be refreshed when a new timeout is configured.



Note: Scanning Timeout is available for Single Mode. With scanning timeout value defined, the operation will stop after specified time is up upon pressing the trigger.

### 3.1.2 DELAY BETWEEN EACH SCAN (MULTI-TAG MODE ONLY)

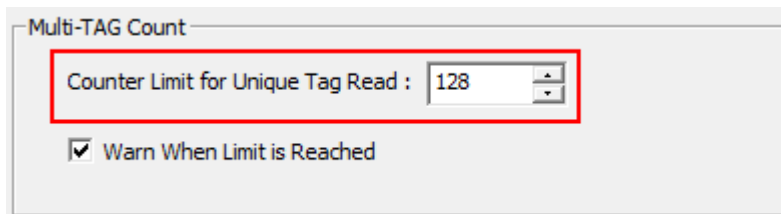
You can set the reader scan continuously or use a delay interval between each decoding. Specify the scanning delay time when the scan mode is set to Multi-Tag Mode.



Note: By default, the scan delay time is set to 100ms (1861)/50ms (1862) between each scan.

### 3.1.3 MULTI-TAG COUNT

The scanned data of Multi-Tag mode will be kept for a fast comparison process. Set a non-zero Multi-Tag counter will create a tag list in the reader. If the scan mode is Multi-Tag, any received individual tag will be compared to the counter and stored in the list (the maximum number of tags in the tag list is 128). When a counter is set, any repeated EPC tags will be ignored. When a tag list is full, the scan action will stop until the list is cleared. This can be done using function key or programming. Once cleared, scanning can continue.



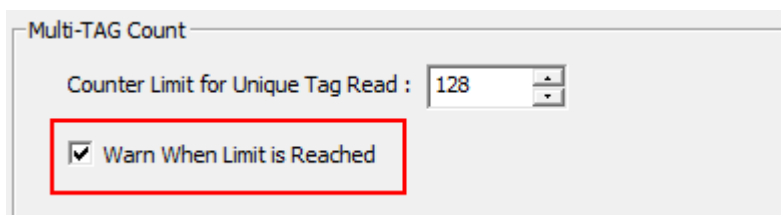
---

Note: The Multi-Tag Count is used to set counter value of a tag list. If this function is disabled (set to '0'), any received tag will be accepted including repeated tags. The scanned data of Multi-Tag mode will be saved in On-chip RAM for a fast comparison process.

---

### 3.1.4 WARN WHEN LIMIT IS REACHED

When the Tag List is full, it notifies the user with a beep. By default, this function is enabled. If the Tag List is full, you have to reset counter so that you can continue to scan tags. To reset the counter, you can reset the system power, Off-On. The counter will also be reset once a new *Bluetooth*<sup>®</sup> connection is established. Please ensure that you select the two settings as the figure shown below. See [3.4.3 Reset Counter When](#) for more details.



### 3.1.5 FILTER

The 1800Configuration supports two ways to filter tags to be scanned. Once a tag is scanned, it can be accepted (Included) or rejected (excluded) based on whether it matches the values used in the filter section.

- ▶ Disable Filter: Disable filter function.
- ▶ Include EPC: Tags will be accepted when all of the defined values in the filter match.
- ▶ Exclude EPC: Tags will be eliminated when all of the defined values in the filter match.

#### Filter Method

The Filter function is based on TAG Types. 1800 RFID Reader supports up to 15 types Tag for filtering. A filter can only be applied to one type of tag, and the tag type must have already been selected in the TAG types page. Refer to [Selecting TAG Types](#).

Note: A tag can be divided into some sections. Sections are different based on various Tag Types. With common 96-bit RFID tags, the total number of bits for each section must equal the tag size of 96 bits. Sometimes, unallocated bits must still be defined and padded with zeros. For example, with SSCC-96, the unallocated area is 24 bits represented as ~n0240.

**GDTI-96/GDTI-113 (Global Document Type Identifier)****Filter Method:**

## ▶ By EPC Filter Value

Filter values marked as “reserved” are reserved for assignment by EPCglobal in future versions of this specification. Alternatively, a filter value identified as “All Others” means that the object to which the affixed Tag does not match the description of any of the other filter values defined in the EPC scheme. When encoding a new Tag, the filter value should be set to match the description of the object to the affixed Tag. “All Others” is used only if a suitable filter value for the object is not defined in the specification.

Type	Filter Value
All Others	0
Reserved	1~7

## ▶ By GS1 Company Prefix

The GS1 Company Prefix, assigned by GS1 to a managing entity, is the same as the GS1 Company Prefix digits within a GS1 key. This value is normally specified for 20-40 bits.

## ▶ By Document Type

The Document Type assigned by the managing entity to a particular class of document.

## ▶ Maximum number of digits in a document type

A partition table below is an indication of where the subsequent Company Prefix and Reference numbers (Document type) are divided. Using this table, if your company prefix is 10-digits long, then you would use the partition value of 2 and use 2-digits for the value of the Document Type. You have to input “2” for the maximum number of digits in a document type. (For this example, the maximum number range is from 0 to 6.)

## ▶ Pattern1 and Pattern2

These Pattern parameters are based on the value of “Maximum number of digits in a document type”. The total characters you input in the pattern fields must equal the value of “Maximum number of digits in a document type”.

- For one Pattern: Input the value in Pattern1 or same values in both Pattern1 and Pattern2 fields.
- For a range: Input the min. value in the Pattern1 field and max. value in the Pattern2 field.  
(e.g. Pattern1 is ABC001 and Pattern2 is ABC009 → ABC001~ABC009)

## Coding Table:

<b>Scheme</b>	GDTI-96					
<b>Total Bits</b>	96					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Document Type	Serial
<b>Logical Segment Bit Count</b>	8	3	3	20-40	21-1	41

<b>Scheme</b>	GDTI-113					
<b>Total Bits</b>	113					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Document Type	Serial
<b>Logical Segment Bit Count</b>	8	3	3	20-40	21-1	58
<b>Coding Segment</b>	EPC Header	Filter	Partition + Company Prefix + Document Type			Serial

Partition Table:

<b>Partition Value (P)</b>	<b>Company Prefix</b>		<b>Document Type</b>	
	<b>Bits (M)</b>	<b>Digits (L)</b>	<b>Bits (N)</b>	<b>Digits</b>
0	40	12	1	0
1	37	11	4	1
2	34	10	7	2
3	30	9	11	3
4	27	8	14	4
5	24	7	17	5
6	20	6	21	6

\* Maximum number of digits in Document Type: 0~6 digits/characters

**GSRN-96 (Global Service Relation Number)**

---

**Filter Method:**

- ▶ By EPC Filter Value  
Refer to [GDTI-96](#).
- ▶ By GS1 Company Prefix  
Refer to [GDTI-96](#).
- ▶ By Serial Reference  
The Serial Reference assigned by the managing entity to a particular logistics handling unit.

Coding Table:

<b>Scheme</b>	GSRN-96					
<b>Total Bits</b>	96					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Extension/ Serial Reference	(Reserved)
<b>Logical Segment Bit Count</b>	8	3	3	20-40	38-18	24
<b>Coding Segment</b>	EPC Header	Filter	GSRN			(Reserved)

Partition Table:

<b>Partition Value (P)</b>	<b>Company Prefix</b>		<b>Serial Reference</b>	
	<b>Bits (M)</b>	<b>Digits (L)</b>	<b>Bits (N)</b>	<b>Digits</b>
0	40	12	18	5
1	37	11	21	6
2	34	10	24	7
3	30	9	28	8
4	27	8	31	9
5	24	7	34	10
6	20	6	38	11

\* Maximum number of digits in Serial Reference: 5~11 digits/characters



**SGTIN-96/SGTIN-198 (Serialized Global Trade Item Number)****Filter Method:**

- ▶ By EPC Filter Value

Type	Filter Value
All Others, refer to <a href="#">GDTI-96</a>	0
Point of Sale (POS) Trade Item	1
Full Case for Transport	2
Reserved, refer to <a href="#">GDTI-96</a>	3
Inner Pack Trade Item Grouping for Handling	4
Reserved	5
Unit Load	6
Unit inside Trade Item or component inside a product not intended for individual sale	7

- ▶ By GS1 Company Prefix

Refer to [GDTI-96](#).

- ▶ By Item Reference

The Item Reference assigned by the managing entity to a particular object class.

**Coding Table:**

<b>Scheme</b>	SGTIN-96					
<b>Total Bits</b>	96					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix (*)	Indicator (**) / Item Reference	Serial
<b>Logical Segment Bit Count</b>	8	3	3	20-40	24-4	38
<b>Scheme</b>	SGTIN198					
<b>Total Bits</b>	198					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix (*)	Indicator (**) / Item Reference	Serial
<b>Logical Segment Bit Count</b>	8	3	3	20-40	24-4	140
<b>Coding Segment</b>	EPC Header	Filter	GTIN			Serial

Partition Table:

Partition Value (P)	Company Prefix		Indicator/Pad Digit and Item Reference	
	Bits (M)	Digits (L)	Bits (N)	Digits
0	40	12	4	1
1	37	11	7	2
2	34	10	10	3
3	30	9	14	4
4	27	8	17	5
5	24	7	20	6
6	20	6	24	7

\* Maximum number of digits in Indicator/Pad Digit and Item Reference: 1~7 digits/characters

**SSCC-96 (Serial Shipping Container Code)****Filter Method:**

## ▶ By EPC Filter Value

Type	Filter Value
All Others, refer to <a href="#">GDTI-96</a>	0
Reserved, refer to <a href="#">GDTI-96</a>	1
Full Case for Transport	2
Reserved	3
Reserved	4
Reserved	5
Unit Load	6
Reserved	7

## ▶ By GS1 Company Prefix

Refer to [GDTI-96](#).

## ▶ By Serial Reference

The Serial Reference assigned by the managing entity to a particular logistics handling unit.

## Coding Table:

<b>Scheme</b>	SSCC-96					
<b>Total Bits</b>	96					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Extension / Serial Reference	(Reserved)
<b>Logical Segment Bit Count</b>	8	3	3	20-40	38-18	24
<b>Coding Segment</b>	EPC Header	Filter	SSCC			(Reserved)

## Partition Table:

Partition Value (P)	Company Prefix		Extension Digit and Serial Reference	
	Bits (M)	Digits (L)	Bits (N)	Digits
0	40	12	18	5
1	37	11	21	6
2	34	10	24	7
3	30	9	28	8
4	27	8	31	9
5	24	7	34	10
6	20	6	38	11

\* Maximum number of digits in Extension Digit and Serial Reference: 5~11 digits/characters

**SGLN-96/SGLN-195 (Global Location Number With or Without Extension)****Filter Method:**

- ▶ By EPC Filter Value  
Refer to [GDTI-96](#).
- ▶ By GS1 Company Prefix  
Refer to [GDTI-96](#).
- ▶ By Location Reference  
The Location Reference assigned uniquely by the managing entity to a specific physical location.

Coding Table:

<b>Scheme</b>	SGLN-96					
<b>Total Bits</b>	96					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Location Reference	Extension
<b>Logical Segment Bit Count</b>	8	3	3	20-40	21-1	41
<b>Scheme</b>	SGLN-195					
<b>Total Bits</b>	195					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Location Reference	Extension
<b>Logical Segment Bit Count</b>	8	3	3	20-40	21-1	140
<b>Coding Segment</b>	EPC Header	Filter	GLN			Extension

Partition Table:

Partition Value (P)	Company Prefix		Location Reference	
	Bits (M)	Digits (L)	Bits (N)	Digits
0	40	12	1	0
1	37	11	4	1
2	34	10	7	2
3	30	9	11	3
4	27	8	14	4
5	24	7	17	5
6	20	6	21	6

\*Maximum number of digits in Location Reference: 0~6 digits/characters

**GRAI-96/GRAI-170 (Global Returnable Asset Identifier)****Filter Method:**

- ▶ By EPC Filter Value  
Refer to [GDTI-96](#).
- ▶ By GS1 Company Prefix  
Refer to [GDTI-96](#).
- ▶ By Asset Type  
The Asset Type assigned by the managing entity to a particular class of asset.

**Coding Table:**

<b>Scheme</b>	GRAI-96					
<b>Total Bits</b>	96					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Asset Type	Serial
<b>Logical Segment Bit Count</b>	8	3	3	20-40	24-3	38
<b>Scheme</b>	GRAI-170					
<b>Total Bits</b>	170					
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Asset Type	Serial
<b>Logical Segment Bit Count</b>	8	3	3	20-40	24-3	112
<b>Coding Segment</b>	EPC Header	Filter	Partition + Company Prefix + Asset Type			Serial

**Partition Table:**

<b>Partition Value (P)</b>	<b>Company Prefix</b>		<b>Asset Type</b>	
	<b>Bits (M)</b>	<b>Digits (L)</b>	<b>Bits (N)</b>	<b>Digits</b>
0	40	12	4	0
1	37	11	5	1
2	34	10	10	2
3	30	9	14	3
4	27	8	17	4
5	24	7	20	5
6	20	6	24	6

\* Maximum number of digits in Asset Type: 0~6 digits/characters

## GIAI-96/GIAI-202 (Global Individual Asset Identifier)

**Filter Method:**

- ▶ By EPC Filter Value  
Refer to [GDTI-96](#).
- ▶ By GS1 Company Prefix  
Refer to [GDTI-96](#).
- ▶ By Individual Asset Reference  
The Individual Asset Reference assigned uniquely by the managing entity to a specific asset.

## Coding Table:

<b>Scheme</b>	GIAI-96				
<b>Total Bits</b>	96				
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Individual Asset Reference
<b>Logical Segment Bit Count</b>	8	3	3	20-40	62-42
<b>Scheme</b>	GIAI-202				
<b>Total Bits</b>	202				
<b>Logical Segment</b>	EPC Header	Filter	Partition	GS1 Company Prefix	Individual Asset Reference
<b>Logical Segment Bit Count</b>	8	3	3	20-40	168-148
<b>Coding Segment</b>	EPC Header	Filter	GIAI		

## Partition Table for GIAI-96:

Partition Value (P)	Company Prefix		Individual Asset Reference	
	Bits (M)	Digits (L)	Bits (N)	Digits
0	40	12	42	13
1	37	11	45	14
2	34	10	48	15
3	30	9	52	16
4	27	8	55	17
5	24	7	58	18
6	20	6	62	19

\* Maximum number of digits in Individual Asset Reference: 13~19 digits/characters

Partition Table for GIAI202:

Partition Value (P)	Company Prefix		Individual Asset Reference	
	Bits (M)	Digits (L)	Bits (N)	Max. Characters
0	40	12	148	18
1	37	11	151	19
2	34	10	154	20
3	30	9	158	21
4	27	8	161	22
5	24	7	164	23
6	20	6	168	24

\* Maximum number of digits in Individual Asset Reference: 18~24 digits/characters

**GID-96 (General Identifier)**

---

**Filter Method:**

## ▶ By General Manager Number

The General Manager Number identifies an organizational entity (essentially a company, manager or other organization) that is responsible for maintaining the numbers in subsequent fields – Object Class and Serial Number. This is normal specified for 0-9 digits and the Max. value is specified for 268,435,455.

---

Note: Each General Manager Number is unique and different with a GS1 Company prefix. A General Manager Number may only be used in GID EPCs.

---

## ▶ By Object Class

This is used by an EPC managing entity to identify a class or “type” of thing. These must be unique within each General Manager Number domain. This is normal specified for 0-8 digits and the Max. value is specified for 16,777,215.

Coding Table:

<b>Scheme</b>	GID-96			
<b>Total Bits</b>	96			
<b>Logical Segment</b>	EPC Header	General Manager Number	Object Class	Serial Number
<b>Logical Segment Bit Count</b>	8	28	24	36
<b>Coding Segment</b>	EPC Header	General Manager Number	Object Class	Serial Number



**DoD-96 (US Department of Defense Identifier)****Filter Method:**

- ▶ By EPC Filter Value

Type	Filter Value
Pallet (palletized unit load)	0
Case (shipping and exterior container)	1
Unit pack	2
Reserved, refer to <a href="#">GDTI-96</a>	3~15

- ▶ By Government Managed Identifier

This field will be encoded with the respective supplier's CAGE code. This code identifies the supplier and ensures uniqueness of serial number across all suppliers.

- ▶ By Serial Number

The Serial Number required in the RFID tag ID data construct does not refer to the serial number of the product being shipped. The Serial number in the RFID tag ID is merely a unique number assigned by the supplier to represent a specific RFID tag. This serial number combines with the supplier's Government Managed Identifier.

**Coding Table:**

<b>Scheme</b>	DoD-96			
<b>Total Bits</b>	96			
<b>Logical Segment</b>	EPC Header	Filter	Government Managed Identifier	Serial Number
<b>Logical Segment Bit Count</b>	8	4	48	36

\* Maximum number of digits in Serial Reference: 0~11 digits/characters

**ADI-var (ADI Identifier)**

---

**Filter Method:**

## ▶ By EPC Filter Value

Type	Filter Value
All Others, refer to <a href="#">GDTI-96</a>	0
Item, other than an item to which filter values 8 through 63 apply	1
Carton	2
Reserved, refer to <a href="#">GDTI-96</a>	3~5
Pallet	6
Reserved	7
Seat cushions	8
Seat covers	9
Seat belts	10
Galley cars	11
Unit Load Devices, cargo containers	12
Security items (life vest boxes, rear lav walls, lav ceiling access hatches)	13
Life vests	14
Oxygen generators	15
Engine components	16
Avionics	17
Experimental ("flight test") equipment	18
Other emergency equipment (smoke masks, PBE, crash axes, medical kits, smoke detectors, flashlights. etc.)	19
Other rotables; e.g., line or base replaceable	20
Other repairable	21
Other cabin interior	22
Other repair (exclude component); e.g., structure item repair	23
Reserved	24~63

## ▶ By CAGE/DoDAAC

The 6-Bit CAGE/DoDAAC encoding method is used for a segment that appears as a 5-character CAGE code or 6-character DoDAAC in the URI, and as a 36-bit encoded bit string in the binary encoding.

## ▶ By Part Number

An original part number is unique within the CAGE code or DoDAAC and a sequential serial number is also uniquely assigned within the original part number.

Coding Table:

<b>Scheme</b>	ADI-var				
<b>Total Bits</b>	Variable: between 68 and 434 bits (inclusive)				
<b>Logical Segment</b>	EPC Header	Filter	CAGE/DoDAAC	Part Number	Serial Number
<b>Logical Segment Bit Count</b>	8	6	36	Variable	Variable
<b>Coding Segment</b>	EPC Header	Filter	CAGE/DoDAAC	Part Number	Serial Number

\* Maximum number of digits in Serial Reference: 1~32 digits/characters

Note: Tags cannot be accepted unless all of the defined configurations are fitted.

## 3.2 MEMORY MODE

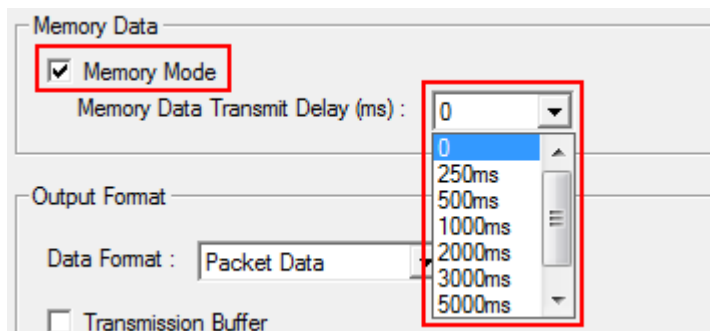
The reader has 4MB flash memory for memory mode operation. When the reader is in memory mode with green LED5 flashing and blue LED2 off that means any real-time connection established with the host is disabled. If you want to get a real-time connection, you have to disable the memory mode. You can confirm the memory size by selecting **Tools | Memory Size** upon connection. By default, the memory mode is disabled.

---

Warning: No real-time connection is allowed unless the memory mode is disabled.

---

### 3.2.1 DATA TRANSMIT DELAY



You may set a delay time (0~8000ms.; 0= Disable) between each data record while transmitting data back to the host computer.

### 3.2.2 SEND DATA & CLEAR MEMORY

When flash memory is full, the reader will respond with two short beeps (high-low tone) as a warning. You are advised to send data to the host immediately and clear memory. For more information, refer to 1800 Reference Manual.

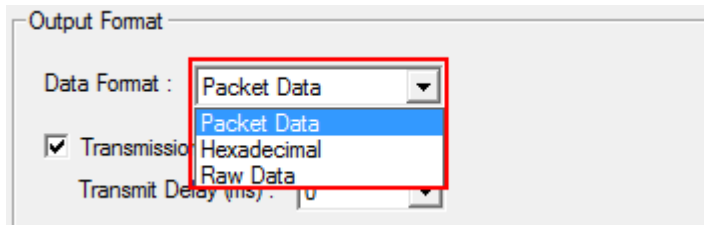
When you connect the cable in Memory Mode, the reader is set to the output interface of "Direct USB Virtual COM" by default for data transmission.

Unless you clear the memory by programming or pressing <F1>+<Trigger>, the flash memory won't be cleared up even if the data is sent to the host computer.

### 3.3 OUTPUT FORMAT

#### 3.3.1 DATA FORMAT

Before transmitting data captured by the reader you can edit, add, and re-order the sequence of the final transmitted data. There are three output formats specified to various *Bluetooth*® interfaces. When the Data Format field is specified using Hexadecimal and Raw Data, the Counter, Timestamp, and EPC Tag panels on the screen will then be available.



- 1) Packet Data
- 2) Hexadecimal
- 3) Raw Data

- ▶ **Packet Data:** In order to reduce the data loss during transmission, header and checksum are added before transmitting. This is normally used for terminal programming. Please note that Packet data does not allow any editing features.
- ▶ **Hexadecimal:** The output data consists of 16 distinct symbols, the numbers 0 to 9 and the letters A to F. Two hexadecimal digits represent one byte (8 bits). It is easier for users to read hexadecimal numbers than binary numbers.
- ▶ **Raw Data:** As the name implies, raw data output will be recorded and displayed faithfully according to the original data type. In this case, the output data type will be in Hexadecimal, but adopting the sequence and options selected by the user.

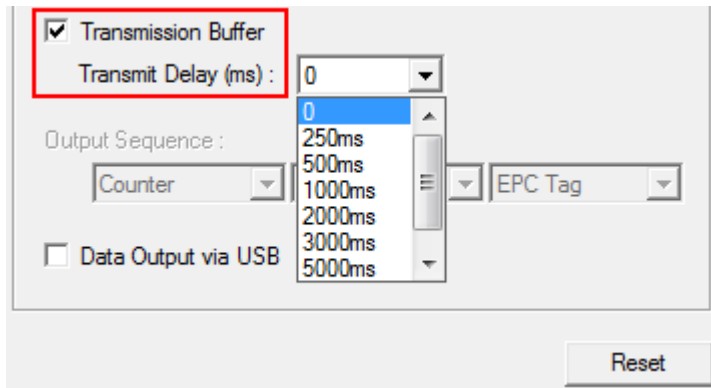
Note:

The output formats for *Bluetooth*® SPP/3610 VCOM (USB VCOM via 3610) can be Packet Data, Hexadecimal, or Raw Data. The default value is Packet Data.

The output formats for *Bluetooth*® HID/3610 HID (USB HID via 3610) can be Hexadecimal or Raw Data. The default value is Hexadecimal.

### 3.3.2 TRANSMISSION BUFFER

By default, the transmit buffer is enabled and is used when the reader is NOT in memory mode, and is out of range of the host. Upon reading a tag successfully within range, the reader responds with one short beep (high tone) and its LED3 indicator becomes solid green and goes off.



---

Note: The Transmission buffer has 2KB SRAM capacity.

---

#### When transmit buffer is enabled...

If the reader is out of range, it will respond with two short beeps, high-low tone, upon reading a tag successfully.

When transmit buffer is full, the reader will respond with one long beep (low tone) and its LED2 indicator will become solid red on-off. You are advised to get back to range.

#### When transmit buffer is disabled...

If the reader is out of range, it will respond with one long beep (low tone) and its LED2 indicator will become solid red on-off. You are advised to get back to range.

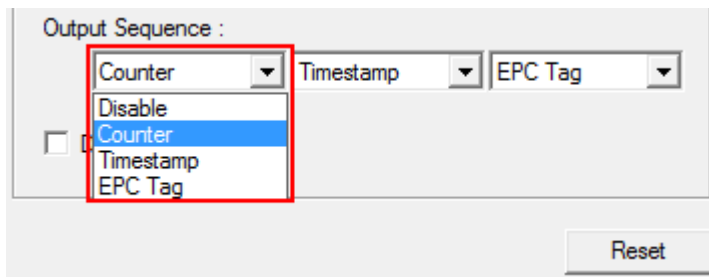
#### Transmit Delay (0~8000ms.; 0= Disable)

'0' is set by default that means without transmit delay time during transmission.

### 3.3.3 OUTPUT SEQUENCE

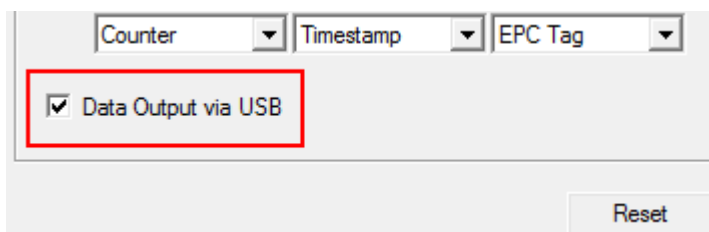
Once the individual sections have been configured, you can now set the full data sequence output. Select the desired section in the order required through the drop-down menus associated with the three output sections.

Should you wish NOT to output any of the sections, select "disable" for that section in the drop-down menu. The Reset button will revert the output sequence to its default values.



### 3.3.4 DATA OUTPUT VIA USB

Ticking this checkbox enables EPC tag data to be output through USB VCOM.



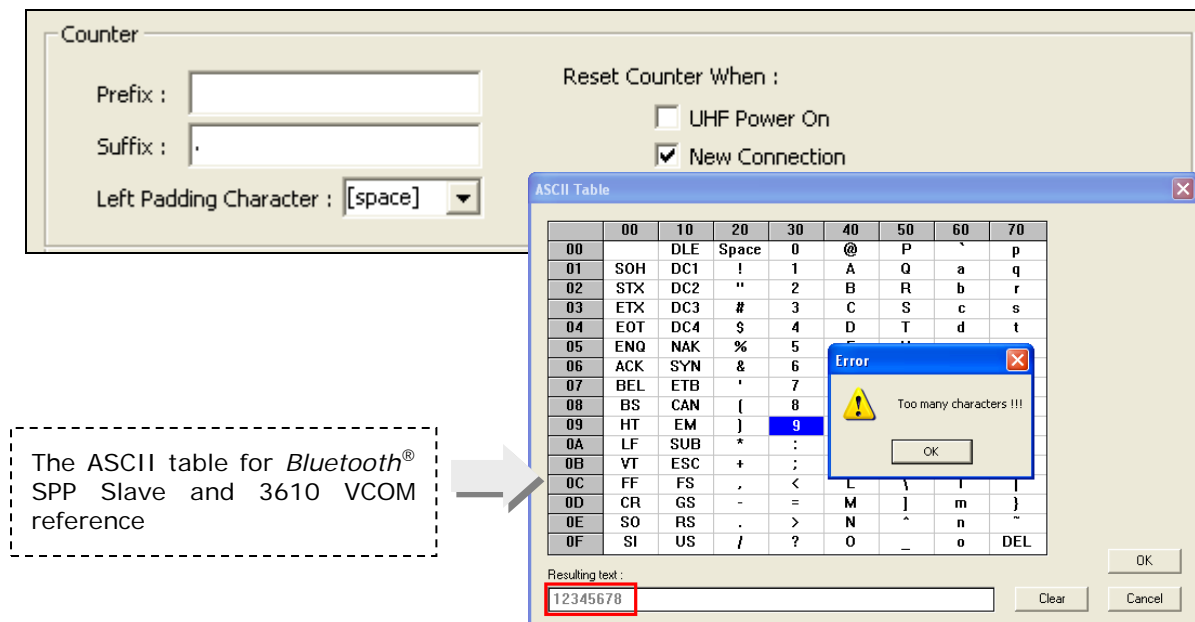
### 3.4 COUNTER

For 1800 RFID Reader to apply any editing format, the maximum output data length of a tag is 256-bit after configuration. Data output would be divided into three sections: Count, Timestamp, and RFID Data (EPC Tag).

- 1) Each section can be enabled or disabled.
- 2) Each section has individual prefix and suffix.
- 3) The sequence for each section can be adjusted.

#### 3.4.1 PREFIX/SUFFIX

Click the Prefix/Suffix fields to bring up the ASCII table to define a prefix/suffix for the counter. The prefix/suffix can be up to 8 characters. If it is specified over 8 characters, an error window will appear. The first 8 characters will be kept in the Resulting text field after clicking the OK button of the error window. Then check whether the kept characters in the text field are exactly what you want. Click the OK button of the ASCII Table window to accept or click the Clear button to re-input within 8 characters. The total counter will be count from 000000 to 999999.



By default, there is no prefix, and [ENTER] or [CR] (Carriage Return) is configured to be suffix to each data. For example, if you wanted to set up "Tag\_Test" as the prefix, the data transmitted would be: "Tag\_Test300034303 331 30303132303030304221".

The default values for prefix/suffix of data output sections are described as below:

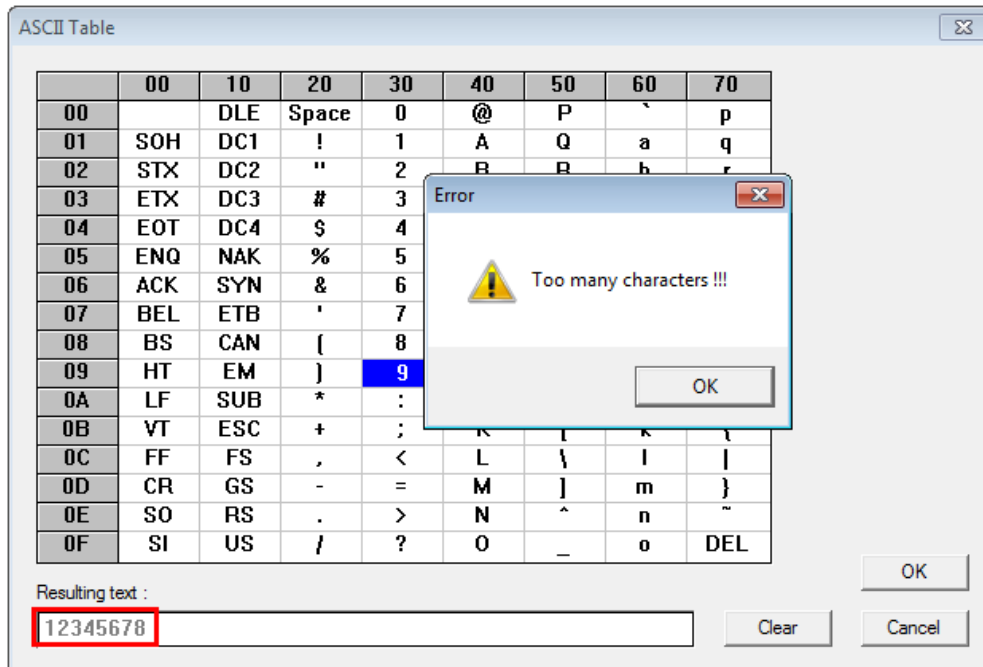
- 1) Prefix of Counter Section: By default, [NULL] is entered.
- 2) Prefix of Time Stamp Section: By default, [Space] is entered.
- 3) Prefix of RFID Data Section: By default, [NULL] is entered.

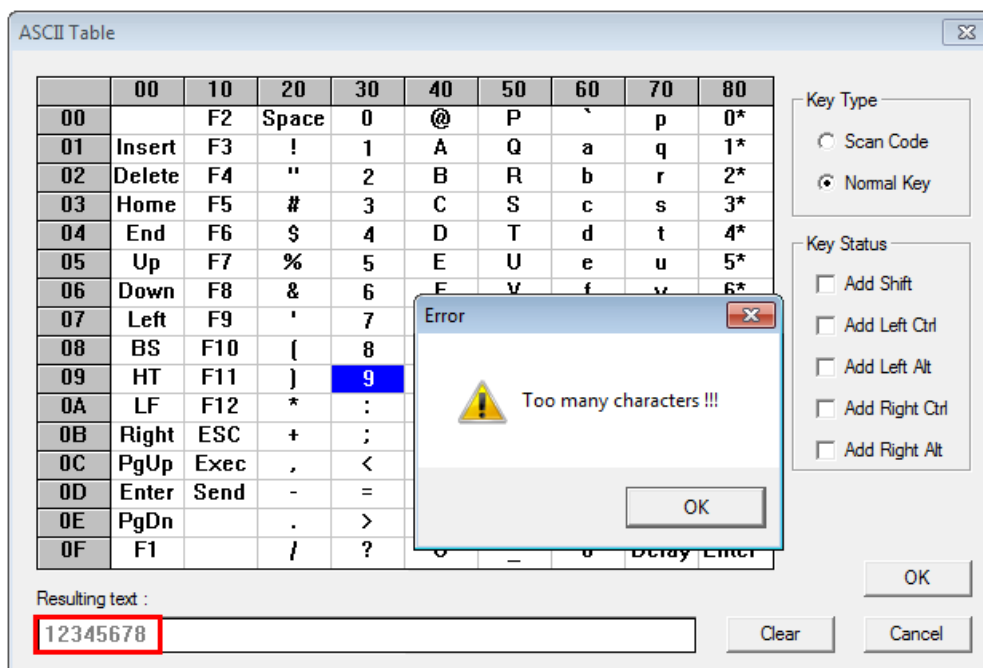


- 4) Suffix of Counter Section: By default, [.] is entered.
- 5) Suffix of Time Stamp Section: By default, [SPACE] is entered.
- 6) Suffix of RFID Data Section: By default, [CR] is entered.

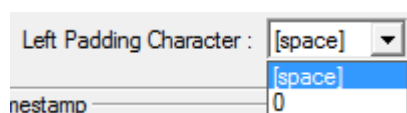
Click the Prefix or Suffix field so that you can choose characters from the pop-up window of ASCII Table. Refer to [ASCII TABLE](#).

**Example 1:** *Bluetooth®* SPP and USB VCOM via 3610 (3610 VCOM)



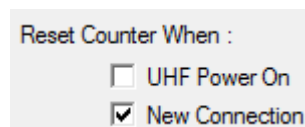
**Example 2:** BT HID and USB HID via 3610 (3610 HID)**3.4.2 LEFT PADDING CHARACTER**

You can define the padding character as a prefixed counter to be padded before the data counter. Please refer to [ASCII TABLE](#) for further information. By default, the value is [space].

**3.4.3 RESET COUNTER WHEN**

In addition to system powering on, you can reset the data counter when:

- ▶ UHF Power On: this checkbox is disabled by default. Enable it to reset the data counter when any one of the following events occurs.
  - Toggle the switch on the 1800 RFID reader.
  - Resume from Power Saving Mode.
- ▶ New Connection: this checkbox is enabled by default. When the reader connects to another *Bluetooth*® device, the data counter is reset.



### 3.5 TIMESTAMP

Timestamp format consists of Date, Time, and Day of Week. By default, the Day of Week field is disabled. Separators can be used between them. You can also add Prefix/Suffix to Timestamp section; please refer to [3.4.1 Prefix/Suffix](#).

Simply select the required sequence from the Timestamp Format pull-down menu. There are 10 types of Timestamp sequences that have been pre-defined.

- 1) [Date]
- 2) [Date][Time]
- 3) [Date][Time][Day of Week]
- 4) [Date][Day of Week][Time]
- 5) [Time]
- 6) [Time][Date]
- 7) [Time][Date][Day of Week]
- 8) [Time][Day of Week][Date]
- 9) [Day of Week][Date][Time]
- 10) [Day of Week][Time][Date]

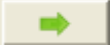
Click the Timestamp Field Separator pull-down menu to select from separator options.

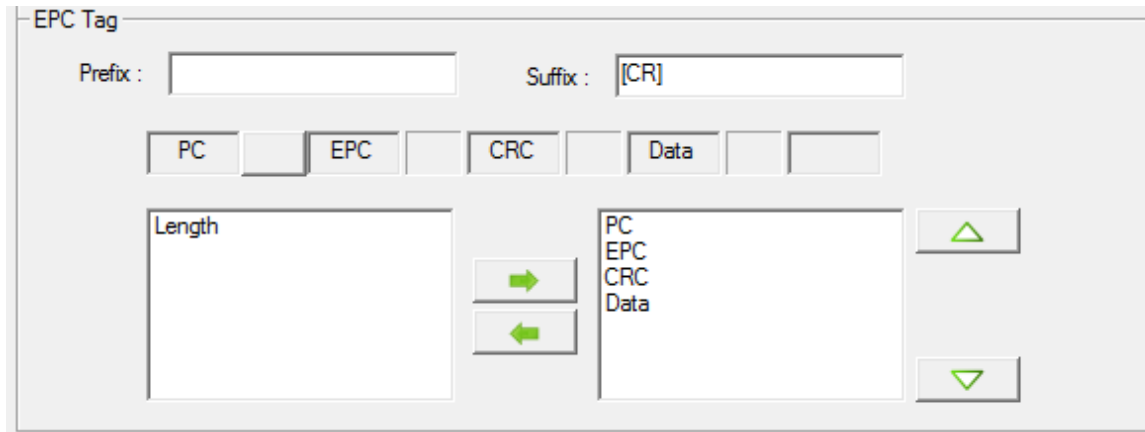
- 1) [SPACE]
- 2) [-]
- 3) [.,]

### 3.6 EPC TAG

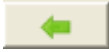
EPC Tag section is divided into 4 fields including PC, EPC, CRC, and Data Length. Separators can be defined among the fields.

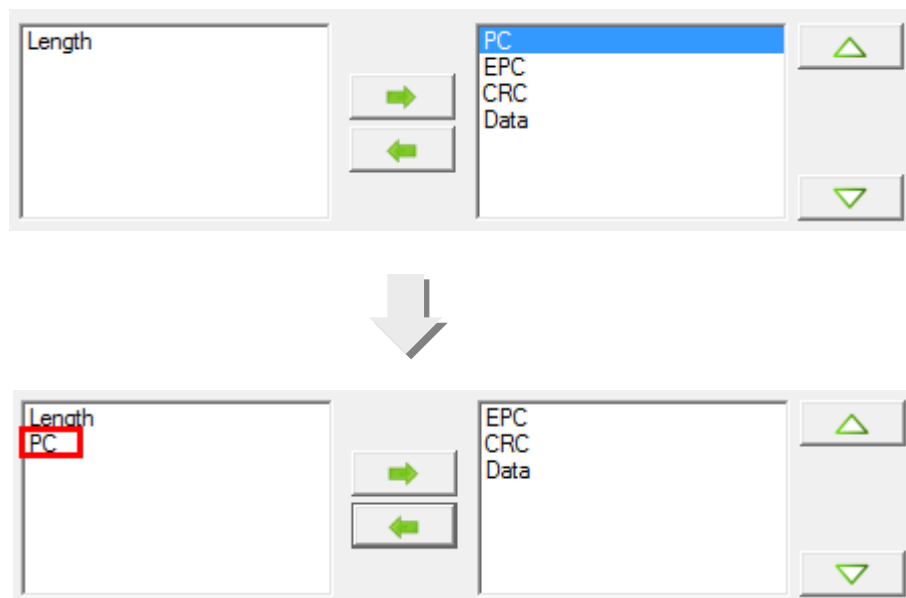
By default, EPC data sequence consists of PC, EPC, and CRC. The Length field is disabled.

Simply select the items in sequence, and they will appear on the right side field by clicking . This field output sequence can be assigned in any desired order.




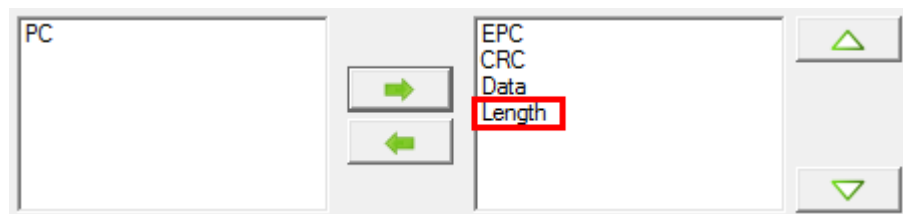
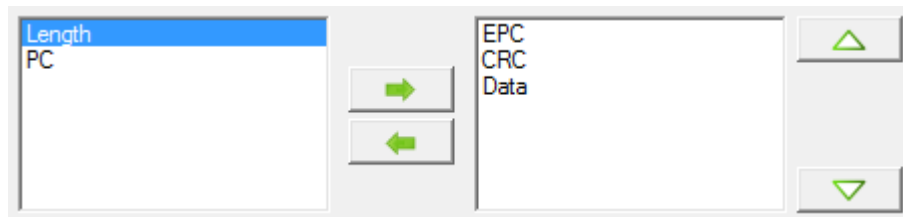
The EPC Tag configuration window shows a 'Prefix' field, a 'Suffix' field containing '[CR]', and a row of buttons for PC, EPC, CRC, and Data. Below these is a 'Length' field and a list box containing PC, EPC, CRC, and Data. Between the fields are two arrow buttons (right and left). To the right of the list box are up and down arrow buttons.



Select the item you don't want to output. Click  to disable the selected item.

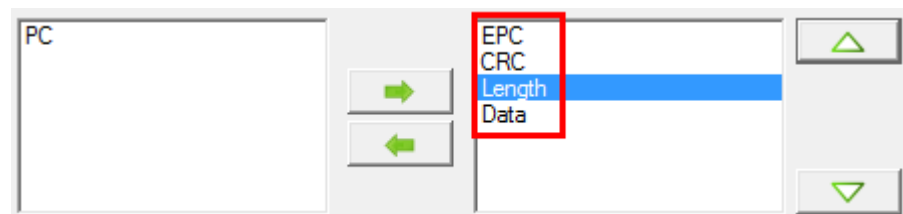
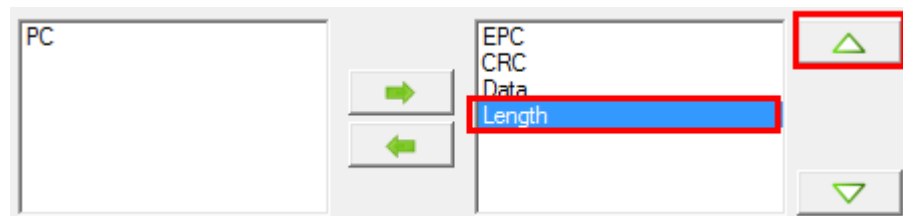


The diagram illustrates the process of modifying the output sequence. In the first state, the 'Length' field is empty and the list box contains PC, EPC, CRC, and Data. The left arrow button is used to move 'PC' from the list box to the 'Length' field. In the second state, 'PC' is now in the 'Length' field, and the list box contains EPC, CRC, and Data. A large downward arrow indicates the transition between the two states.

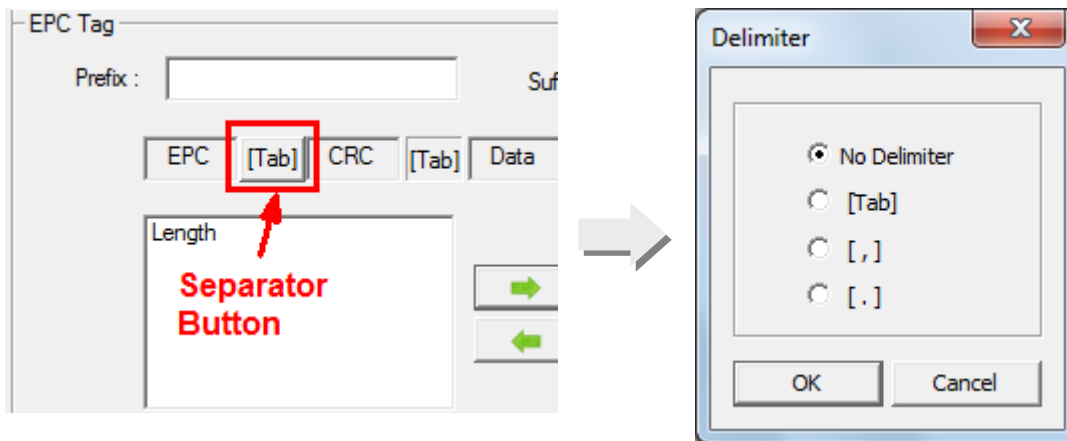
To include an item in the output, select it from the left window and click .



Click  or  to configure the output order of the selected items.

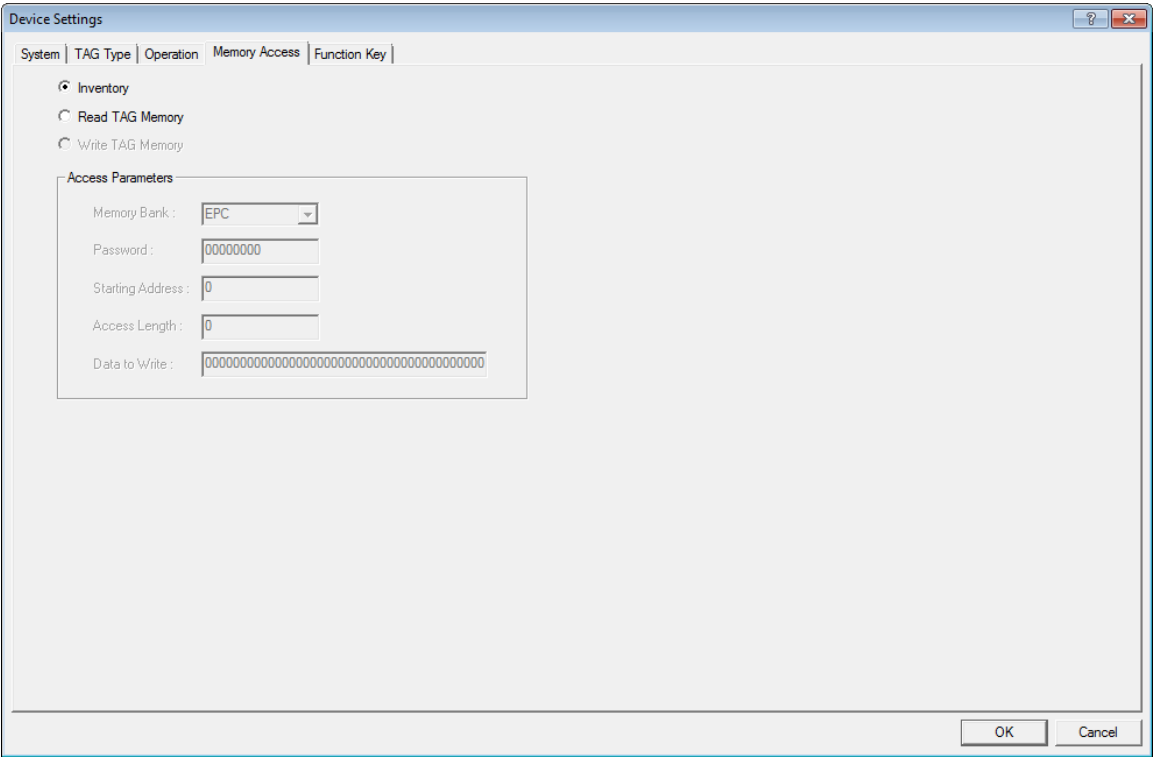


Also, you can click the separator button to bring up the [Delimiter] window. There are 3 delimiter options.



MEMORY ACCESS

This tab allows users to read/write the tag memory that consists of four banks – Reserved memory, EPC memory, TID memory, and User memory.



IN THIS CHAPTER

4.1 Inventory ..... 66

4.2 Read TAG Memory ..... 66

4.3 Write TAG Memory ..... 67

## 4.1 INVENTORY

By default, the RFID reader access mode is set to Inventory to get EPC of a tag. If you want to read all data stored in a tag, click the Read TAG Memory radio button.

The screenshot shows the 'Inventory' mode selected with a radio button. Below the mode selection are three radio buttons: 'Inventory' (selected), 'Read TAG Memory', and 'Write TAG Memory'. Under the 'Access Parameters' section, there are five input fields: 'Memory Bank' (a dropdown menu showing 'EPC'), 'Password' (a text box with '00000000'), 'Starting Address' (a text box with '0'), 'Access Length' (a text box with '0'), and 'Data to Write' (a long text box filled with zeros).

## 4.2 READ TAG MEMORY

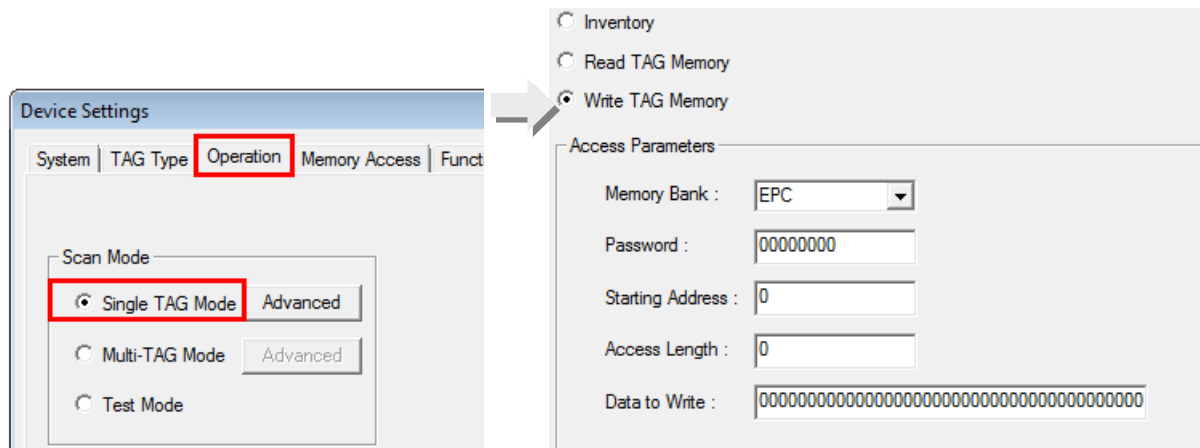
Click the Read TAG Memory radio button to get data from other memory banks besides EPC. Further details please refer to 1800 Reference Manual.

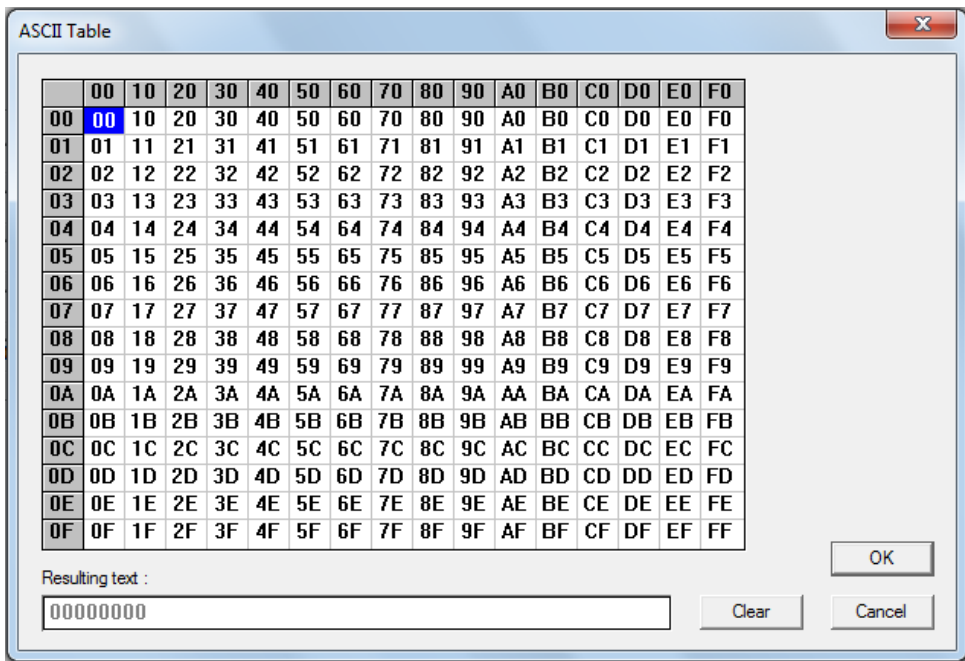
The screenshot shows the 'Read TAG Memory' mode selected with a radio button. Below the mode selection are three radio buttons: 'Inventory', 'Read TAG Memory' (selected), and 'Write TAG Memory'. Under the 'Access Parameters' section, there are five input fields: 'Memory Bank' (a dropdown menu showing 'EPC' with a list of options: 'Reserved', 'EPC', 'TID', and 'User'), 'Password' (a text box with '00000000'), 'Starting Address' (a text box with '0'), 'Access Length' (a text box with '0'), and 'Data to Write' (a long text box filled with zeros).

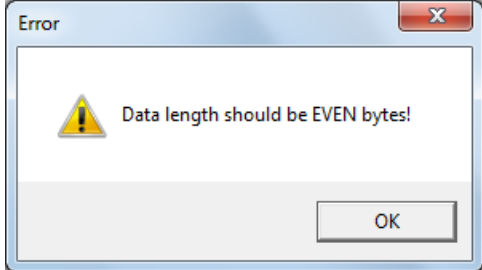


### 4.3 WRITE TAG MEMORY

Click the Write TAG Memory radio button to write data to memory banks. This function is available only when the **Scan Mode** on the **Operation** tab is set to **Single TAG Mode**.



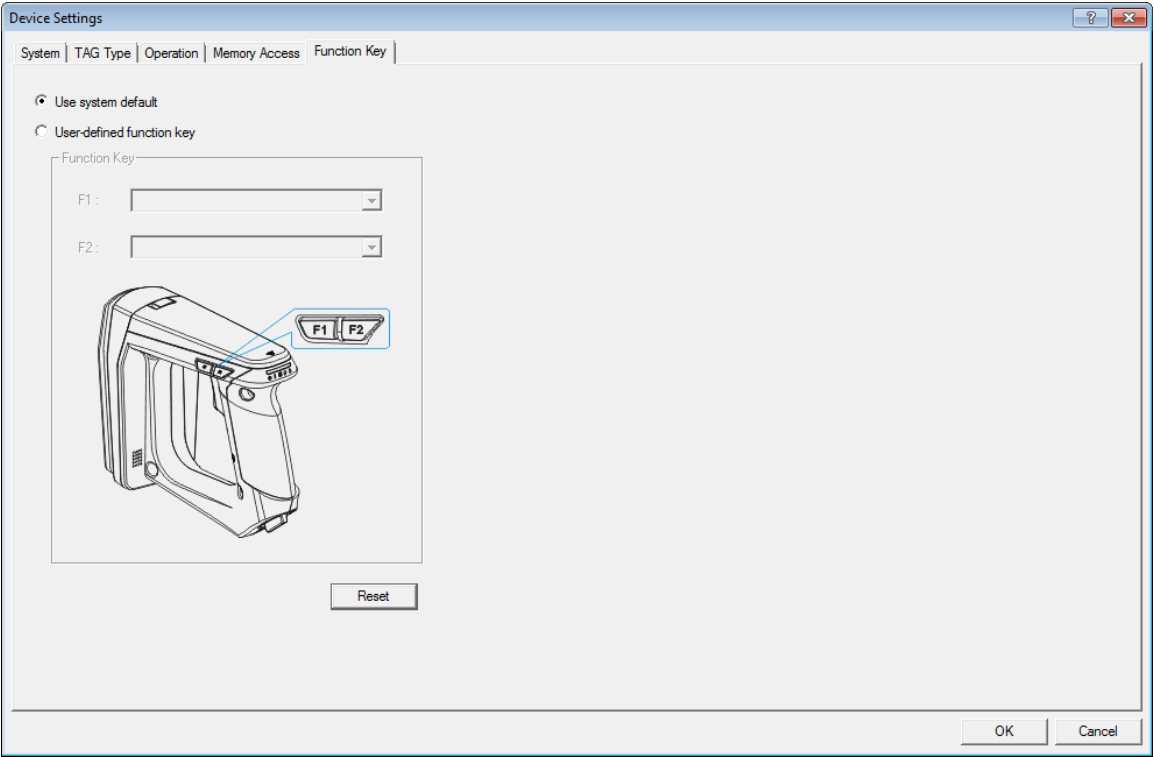
Access Parameters	Description
<i>Memory Bank</i>	Click the drop-down menu to select the destination bank to which the data will be written.
<i>Password</i>	Assign a four-byte access password. Click the text field to bring up the ASCII Table window where you can simply click to choose Hexadecimal numeric characters for creating a password string. A '00000000' string shows by default.
	
<i>Starting Address</i>	Only even numbers (0, 2, 4, ... , 32) are valid for the start byte. Default value is '0'.

<i>Access Length</i>	Only even numbers (0, 2, 4, ... , 32) are valid for data length bytes. Default value is '0'.
<i>Data to Write</i>	Specify the data to be written to the memory bank. The amount of bytes of input data must be even, otherwise an error message will show up until users give data in even bytes.
	 An error dialog box with a blue title bar labeled 'Error' and a red close button. Inside the dialog, there is a yellow warning triangle icon followed by the text 'Data length should be EVEN bytes!'. At the bottom right of the dialog is an 'OK' button.

# Chapter 5

## FUNCTION KEY

This tab allows users to assign commands to F1 and F2 keys.

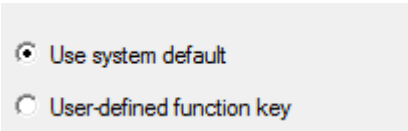


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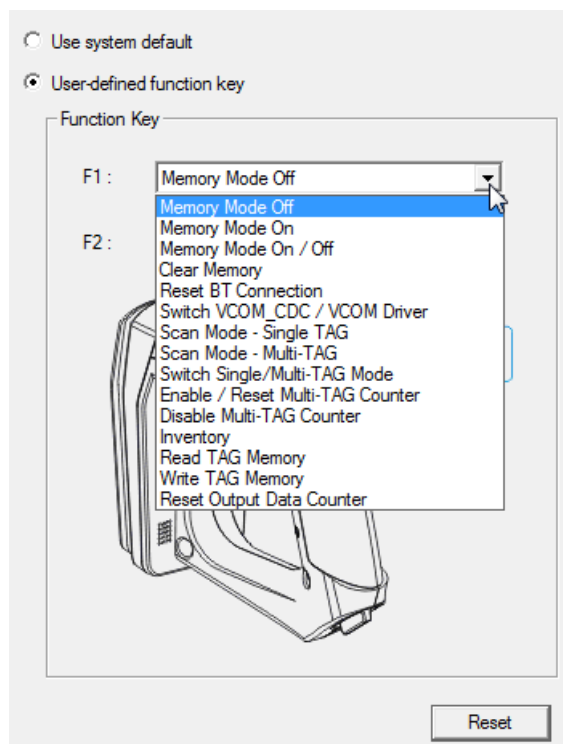
### 5.1 USE SYSTEM DEFAULT

With this radio button selected, the system default settings will be applied to the two function keys. Clicking **Reset** will also set the two function keys to system default. For further details, please refer to the 1800 series reference manual.



## 5.2 USER-DEFINED FUNCTION KEY

With the User-defined function key radio button selected, users can click the drop-down menus to assign commands to F1 and F2 keys respectively.



Command	Description
<i>Memory Mode Off</i>	Turn off memory mode.
<i>Memory Mode On</i>	Turn on memory mode.
<i>Memory Mode On/off</i>	Switch between turning on and off memory modes.
<i>Clear Memory</i>	Erase the memory.
<i>Reset BT Connection</i>	Clear the pairing records.
<i>Switch VCOM_CDC/VCOM Driver</i>	Switch between CDC and SiliconLab USB drivers.
<i>Scan Mode Single TAG</i>	– Set 1800 to single-tag scan mode.
<i>Scan Mode Multi-TAG</i>	– Set 1800 to multi-tag scan mode.
<i>Switch Single/Multi-TAG Mode</i>	Switch between single- and multi-tag modes.

<i>Enable/Reset Multi-TAG Counter</i>	Enable unique tag scan and clear the multi-tag counter.
<i>Disable Multi-TAG Counter</i>	Disable unique tag scan (multi-tag).
<i>Inventory</i>	Set 1800 to Inventory mode to get EPC information.
<i>Read TAG Memory</i>	Apart from EPC, read other data stored in the tag.
<i>Write TAG Memory</i>	Write data to the tag.
<i>Reset Output Data Counter</i>	Reset the output data counter.



## TROUBLESHOOTING

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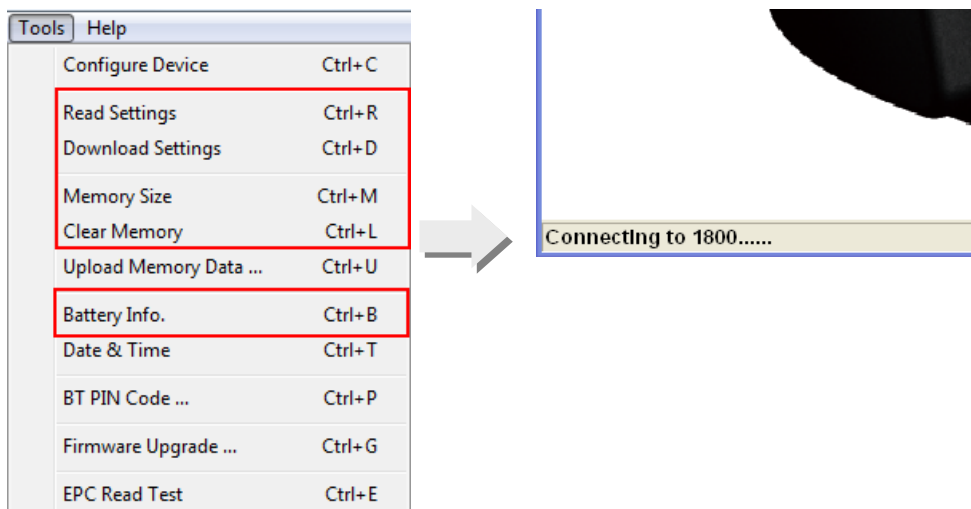
### IN THIS CHAPTER

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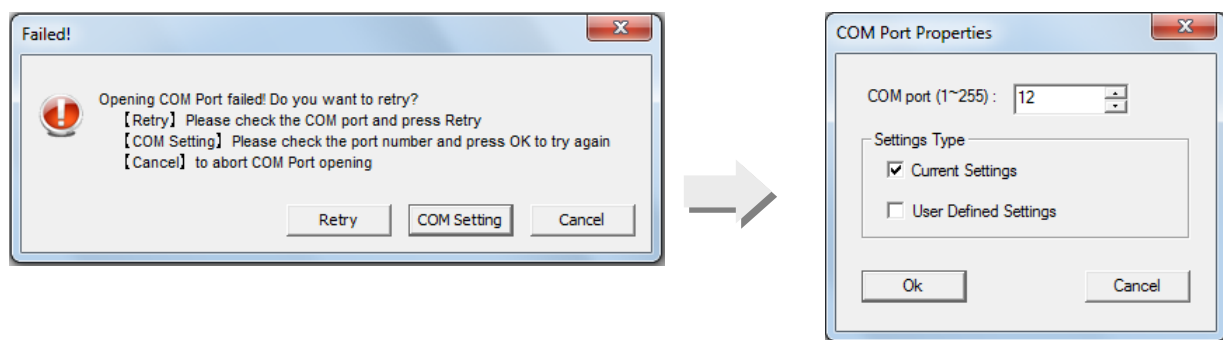
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### 6.1 1800 ACCESS FAILURE

Within the red rectangles as the menu shows below, when any item is selected that needs to re-connect 1800, the prompt message "Connecting to 1800" displays at the bottom-left corner.

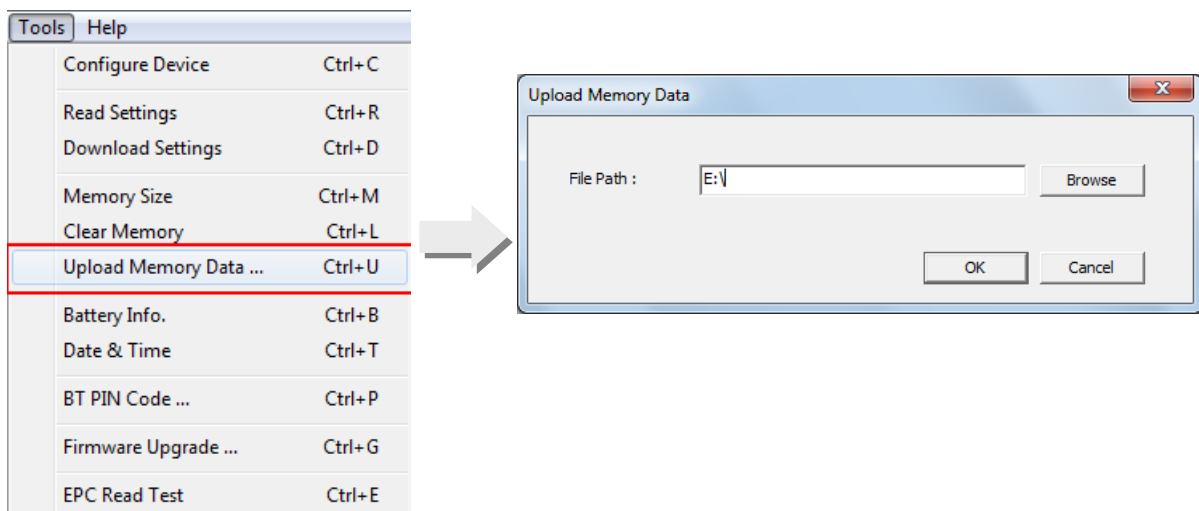


If the attempt of connection fails, an error message dialog box will show up. Click Retry to attempt connection again or click COM Setting to specify COM port properties manually.

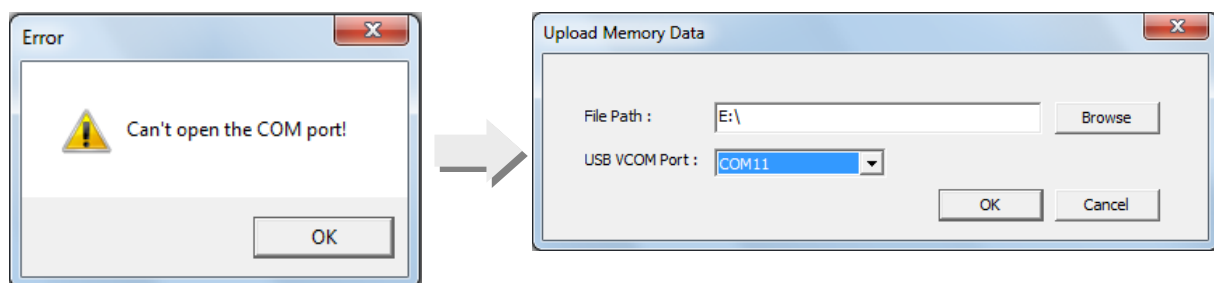


## 6.2 MEMORY UPLOAD FAILURE

Click the Upload Memory Data item on the Tools menu.



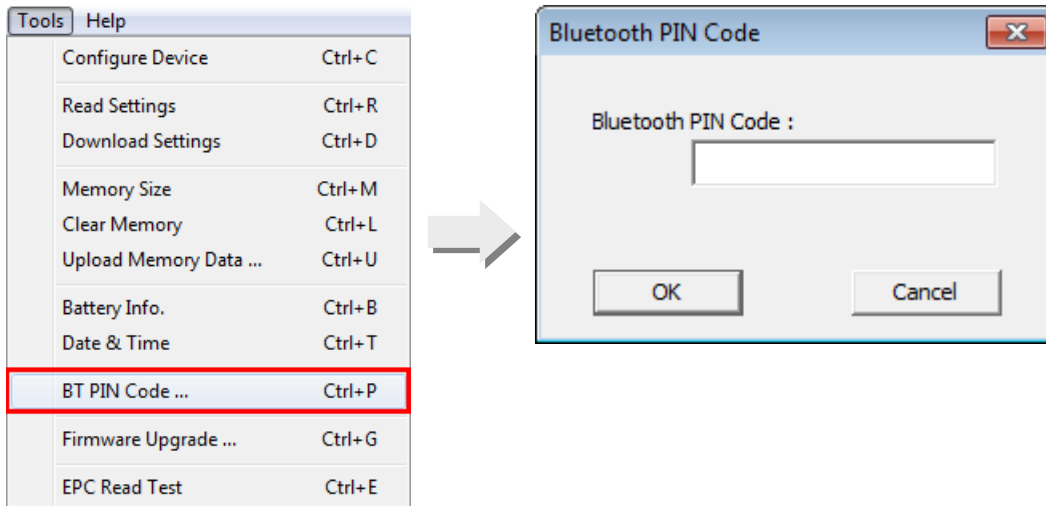
An error message dialog box will show up if the connection between PC and the reader fails. Click the OK button to close the error message dialog box. The Upload Memory Data window then shows up with the USB VCOM port drop-down menu. Select a proper COM port by clicking the drop-down menu and click OK to continue.



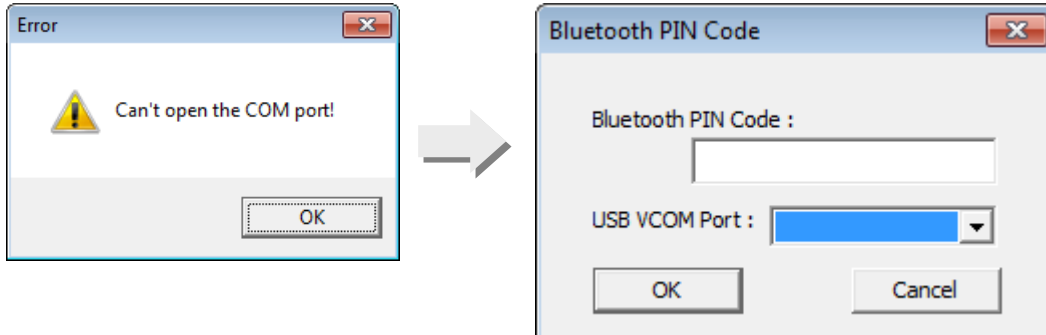


### 6.3 BT PIN CODE FAILURE

Click the BT PIN Code item on the Tools menu.

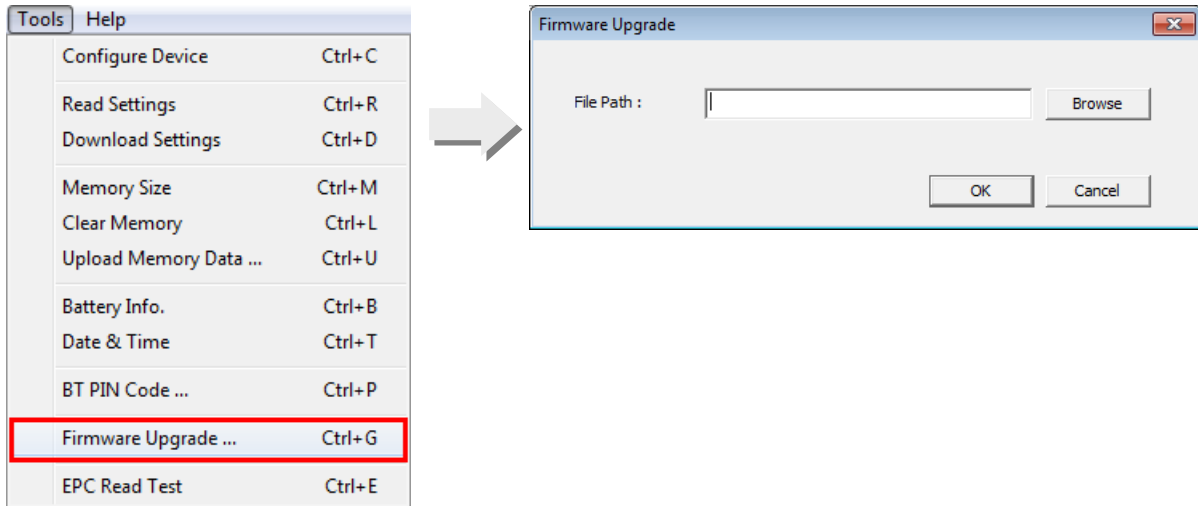


An error message dialog box will show up if the connection between PC and the reader fails. Click the OK button to close the error message dialog box. The PIN Code window then shows up with the USB VCOM port drop-down menu. Input PIN code and select a proper COM port by clicking the drop-down menu.

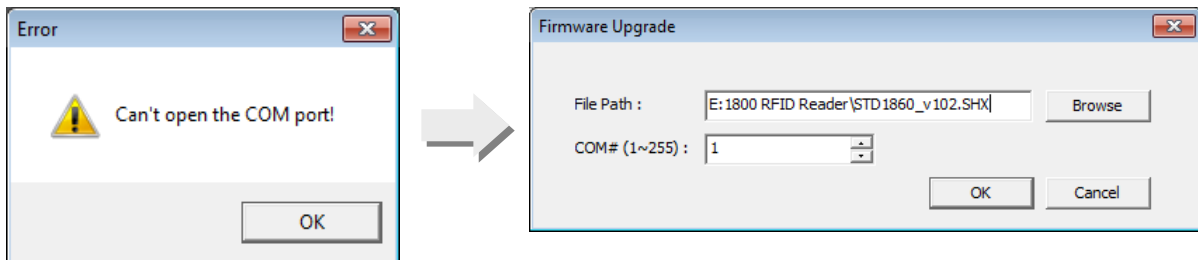


## 6.4 FIRMWARE UPGRADE FAILURE

Click the Firmware Upgrade item on the Tools menu.

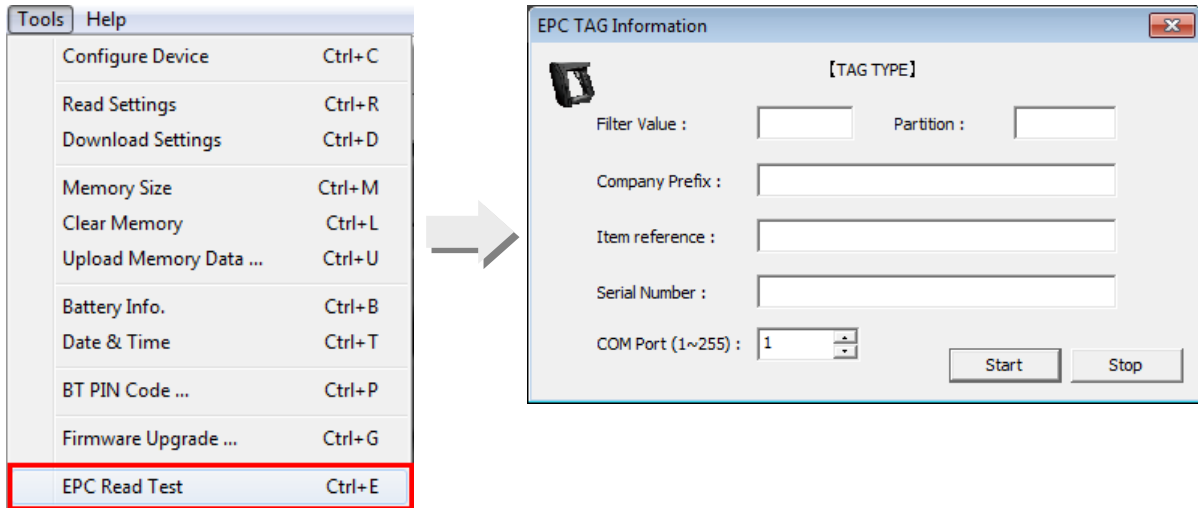


An error message dialog box will show up if the connection between PC and the reader fails. Click the OK button to close the error message dialog box. The Firmware Upgrade window then shows up with the COM port drop-down menu. Specify the firmware path and select a proper COM port by clicking the drop-down menu.

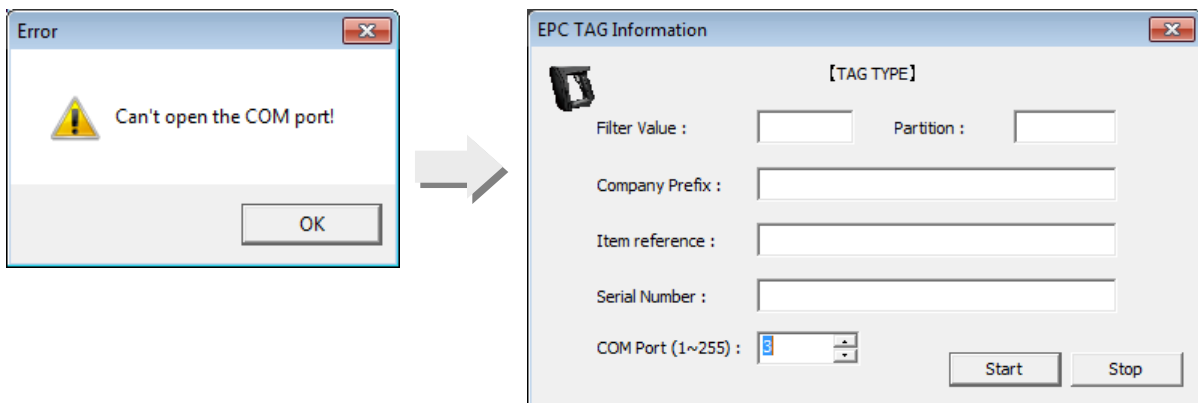


## 6.5 EPC READ TEST FAILURE

Click the EPC Read Test item on the Tools menu.



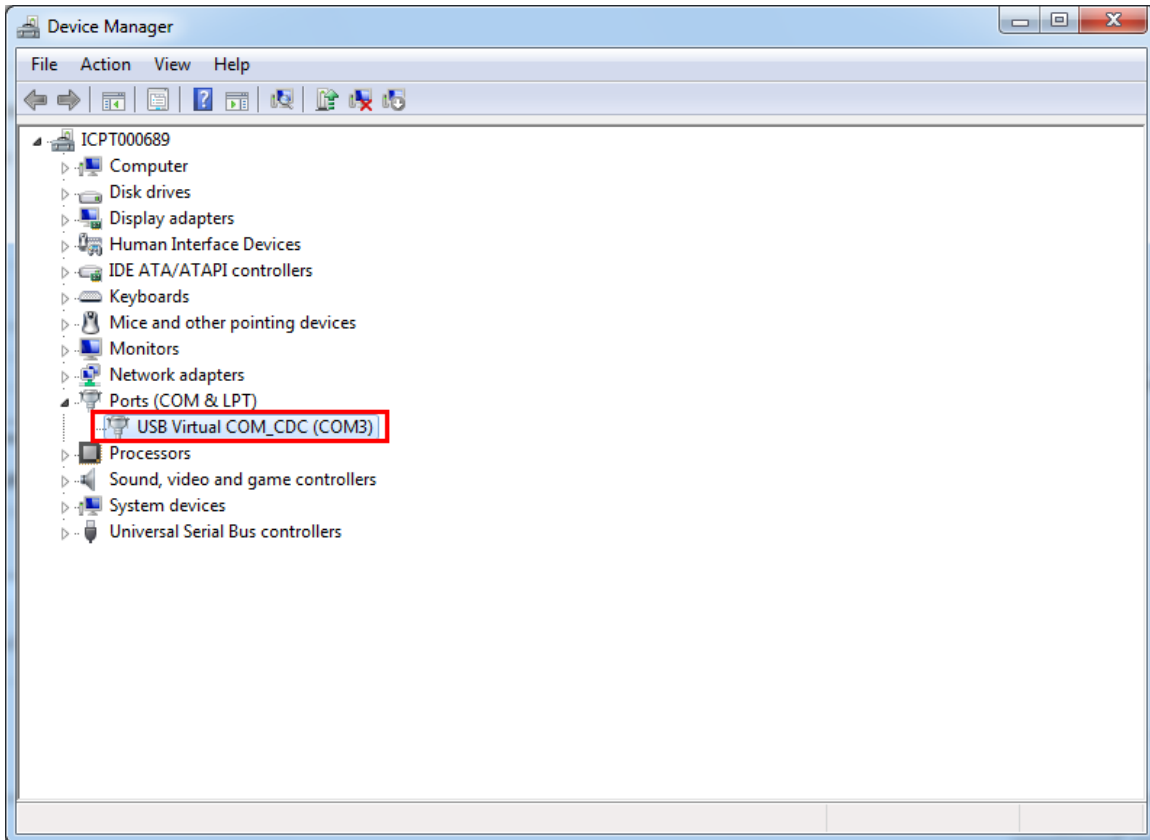
An error message dialog box will show up if the connection between PC and the reader fails. Click the OK button to close the error message dialog box. The EPC TAG Information window then shows up with the COM port drop-down menu. Select a proper COM port by clicking the drop-down menu and click the Start button to continue.



## 6.6 COM PORT VERIFICATION

Sometimes you may want to make sure whether the COM Port used between the reader and host computer is established or works properly.

Go to the **“Device Manager”** on the host computer to confirm the used COM port. For example below, the USB Virtual COM\_CDC - **COM3** is being used.



Use a test application, e.g. HyperTerminal to confirm the connection between the host computer and reader.

---

Note: By default the USB Interface type set on 1800 RFID Reader is Virtual COM CDC (CDC and Silicon USB interfaces available). And users are supposed to install the corresponding driver on host computer before beginning to use the RFID Reader.

---

## ASCII TABLE

### ORIGINAL ASCII TABLE

This is used for the following settings:

- 1) MAC address for *Bluetooth*® SPP Master
- 2) Justified Character
- 3) Prefix/Suffix

Note: This is available only when "*Bluetooth*® SPP" or "USB VCOM via 3610 (3610 VCOM)" is selected for interface.

ASCII Table

	00	10	20	30	40	50	60	70
00		DLE	Space	0	@	P	`	p
01	SOH	DC1	!	1	A	Q	a	q
02	STX	DC2	"	2	B	R	b	r
03	ETX	DC3	#	3	C	S	c	s
04	EOT	DC4	\$	4	D	T	d	t
05	ENQ	NAK	%	5	E	U	e	u
06	ACK	SYN	&	6	F	V	f	v
07	BEL	ETB	'	7	G	W	g	w
08	BS	CAN	[	8	H	X	h	x
09	HT	EM	]	9	I	Y	i	y
0A	LF	SUB	*	:	J	Z	j	z
0B	VT	ESC	+	;	K	[	k	{
0C	FF	FS	,	<	L	\	l	
0D	CR	GS	-	=	M	]	m	}
0E	SO	RS	.	>	N	^	n	~
0F	SI	US	/	?	O	_	o	DEL

Resulting text :

OK

Clear

Cancel

Note: For a TAB character, click "HT".

## SPECIAL ASCII TABLE FOR KEYBOARD INTERFACE

This is used for the following settings:

- 1) Justified Character
- 2) Prefix/Suffix

Note: This is available only when "Bluetooth® HID" or "USB HID via 3610 (3610 HID)" is selected for interface.

## ASCII TABLE – NORMAL KEY

By default, each character programmed is a "Normal Key". Such a character can have associate status settings by adding the Shift/Control/Alternate keys.

	00	10	20	30	40	50	60	70	80
00		F2	Space	0	@	P	`	p	0*
01	Insert	F3	!	1	A	Q	a	q	1*
02	Delete	F4	"	2	B	R	b	r	2*
03	Home	F5	#	3	C	S	c	s	3*
04	End	F6	\$	4	D	T	d	t	4*
05	Up	F7	%	5	E	U	e	u	5*
06	Down	F8	&	6	F	V	f	v	6*
07	Left	F9	'	7	G	W	g	w	7*
08	BS	F10	{	8	H	X	h	x	8*
09	HT	F11	}	9	I	Y	i	y	9*
0A	LF	F12	*	:	J	Z	j	z	
0B	Right	ESC	+	;	K	[	k	{	
0C	PgUp	Exec	,	<	L	\	l		
0D	Enter	Send	-	=	M	]	m	}	
0E	PgDn		.	>	N	^	n	~	
0F	F1		/	?	O	_	o	Delay	Enter*

Key Type:

☐ Scan Code

☒ Normal Key

Key Status:

☐ Add Shift

☐ Add Left Ctrl

☐ Add Left Alt

☐ Add Right Ctrl

☐ Add Right Alt

Resulting text :

Clear OK Cancel

Note: For a TAB character, click "HT".

For example, if you want to program "Ctrl-Shift-B", "C" for Prefix, the programming sequence is as follows:

- 1) Click the Prefix field.
- 2) Select "Normal Key" for Key Type in the Grid Control window.

- 3) Select the check box of "Add Left Ctrl" and "Add Shift" for Key Status.
- 4) Choose "B" from the ASCII table.
- 5) Cancel the check box of "Add Left Ctrl" and "Add Shift".
- 6) Choose "C" from the ASCII table.
- 7) Click [OK] to confirm the setting.

### ASCII TABLE — SCAN CODE

If users want more key press not included in Normal Key type, click the Scan Code radio button to display the table shown below.

The screenshot shows a dialog box titled "ASCII Table" with a close button (X) in the top right corner. The main area contains a 16x16 grid of hexadecimal values from 00 to FF. The cell containing "00" is highlighted in blue. To the right of the grid are two sections: "Key Type" with radio buttons for "Scan Code" (selected) and "Normal Key", and "Key Status" with checkboxes for "Add Shift", "Add Left Ctrl", "Add Left Alt", "Add Right Ctrl", and "Add Right Alt". At the bottom, there is a "Resulting text:" label above a text input field, and three buttons: "OK", "Clear", and "Cancel".

	00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
00	00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
01	01	11	21	31	41	51	61	71	81	91	A1	B1	C1	D1	E1	F1
02	02	12	22	32	42	52	62	72	82	92	A2	B2	C2	D2	E2	F2
03	03	13	23	33	43	53	63	73	83	93	A3	B3	C3	D3	E3	F3
04	04	14	24	34	44	54	64	74	84	94	A4	B4	C4	D4	E4	F4
05	05	15	25	35	45	55	65	75	85	95	A5	B5	C5	D5	E5	F5
06	06	16	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6
07	07	17	27	37	47	57	67	77	87	97	A7	B7	C7	D7	E7	F7
08	08	18	28	38	48	58	68	78	88	98	A8	B8	C8	D8	E8	F8
09	09	19	29	39	49	59	69	79	89	99	A9	B9	C9	D9	E9	F9
0A	0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	AA	BA	CA	DA	EA	FA
0B	0B	1B	2B	3B	4B	5B	6B	7B	8B	9B	AB	BB	CB	DB	EB	FB
0C	0C	1C	2C	3C	4C	5C	6C	7C	8C	9C	AC	BC	CC	DC	EC	FC
0D	0D	1D	2D	3D	4D	5D	6D	7D	8D	9D	AD	BD	CD	DD	ED	FD
0E	0E	1E	2E	3E	4E	5E	6E	7E	8E	9E	AE	BE	CE	DE	EE	FE
0F	0F	1F	2F	3F	4F	5F	6F	7F	8F	9F	AF	BF	CF	DF	EF	FF

Resulting text :

OK Clear Cancel