

CS203 Callback based API Demo Application Program **Quick Start Guide v0.4**

21 July 2009

I. Introduction

This document will describe the details about the CS203 demo application program (CS203_Callback-API_DemoApp) that is based on the Callback-Based API set. Software developers can refer to this demo program for programming CS203 based on this new set of API.

II. Program Structure

The demo application program consists of several different single functions:

CS203 GPIO	Demonstrate the GPIO and IP setting function of the reader
CS203 Start Stop Debug	Demonstrate start stop reader function
CS203 CALLBACK API DEMO	Demonstrate basic operation of the reader. E.g., inventory, read and write etc...
CSLibrary	All necessarily library files will put to this folder
Document	User Documents

III. Build Project Requirement

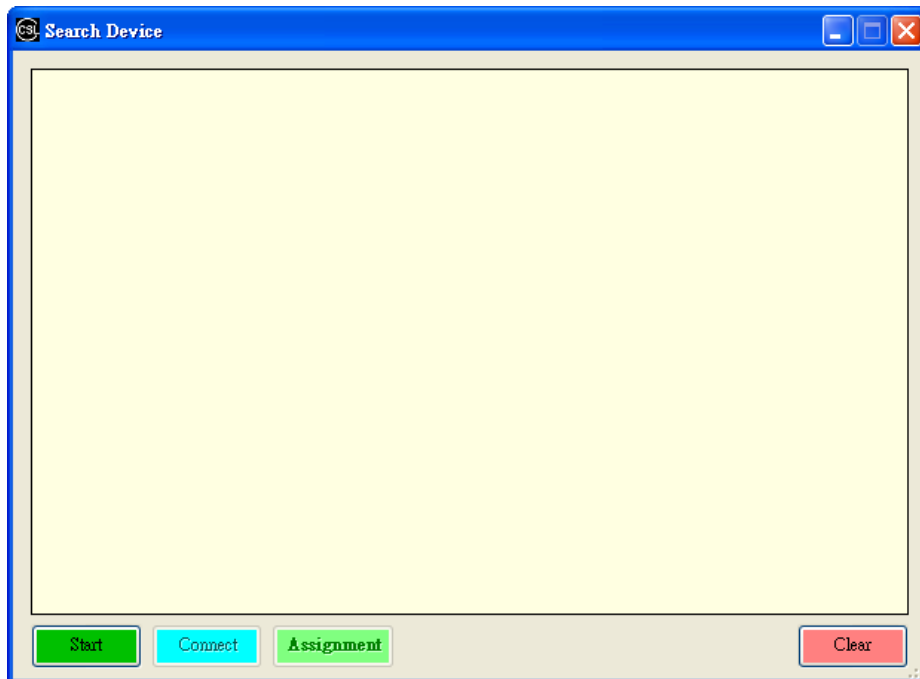
To build demo application successfully, you need to install Microsoft Visual Studio 2005 (with Visual C# component and SP1 patch) or above. For more detailed information, please go to Microsoft webpage (<http://msdn.microsoft.com/en-us/vstudio/default.aspx>).

Visual Studio 2005 SP1 -

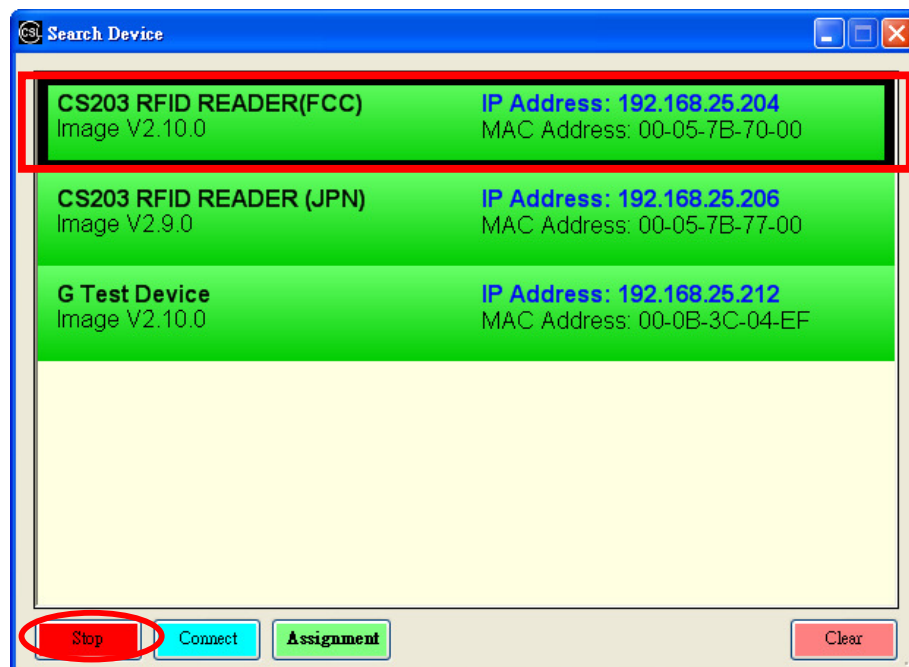
<http://www.microsoft.com/downloads/details.aspx?familyid=bb4a75ab-e2d4-4c96-b39d-37baf6b5b1dc&displaylang=en>

IV. CS203 CALLBACK API DEMO Demo Program Operations

A. Netfinder



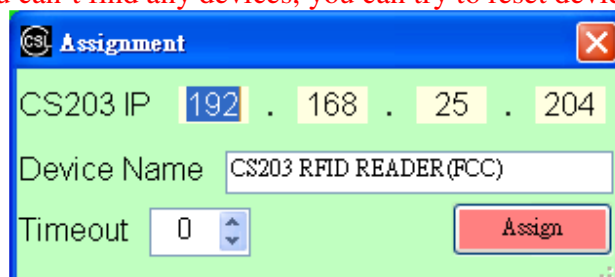
For the latest demo application, you can choose specific device to connect.



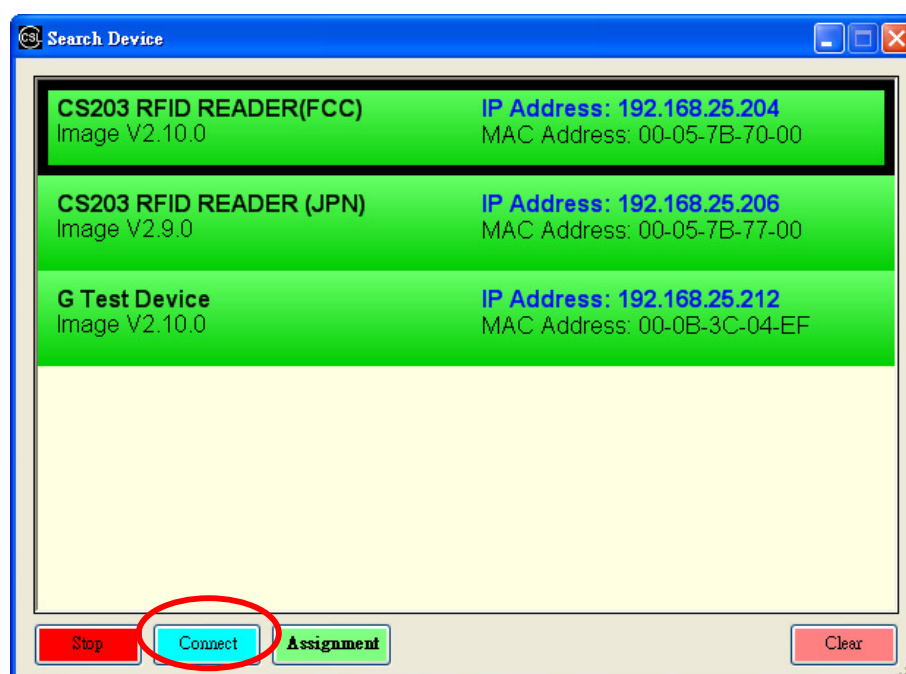
Click "Start" button to search device in the **same network**.

If you found a device, you can change target device IP address or Device Name and tcp timeout.

If you can't find any devices, you can try to reset device first.



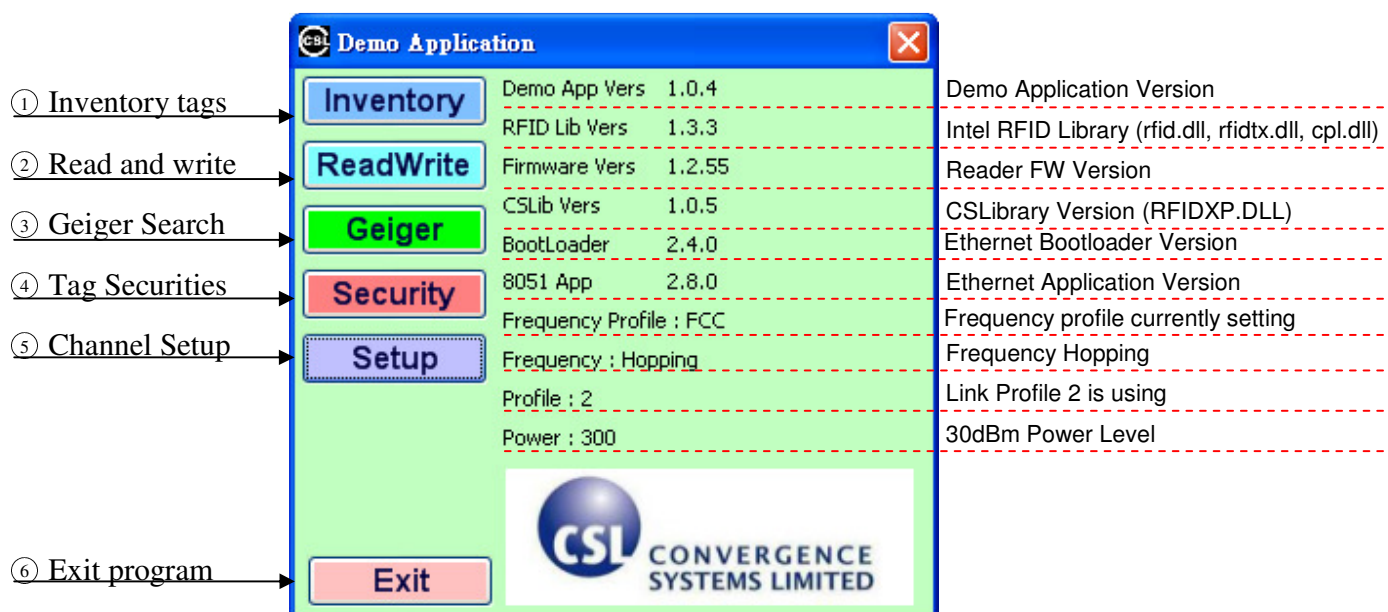
Change the IP address as you want and set TCP timeout to be zero at this moment.



Choose a device and click "Connect" button.

B. Main Menu

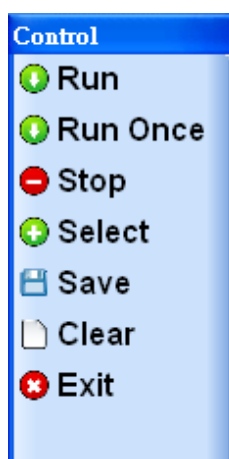
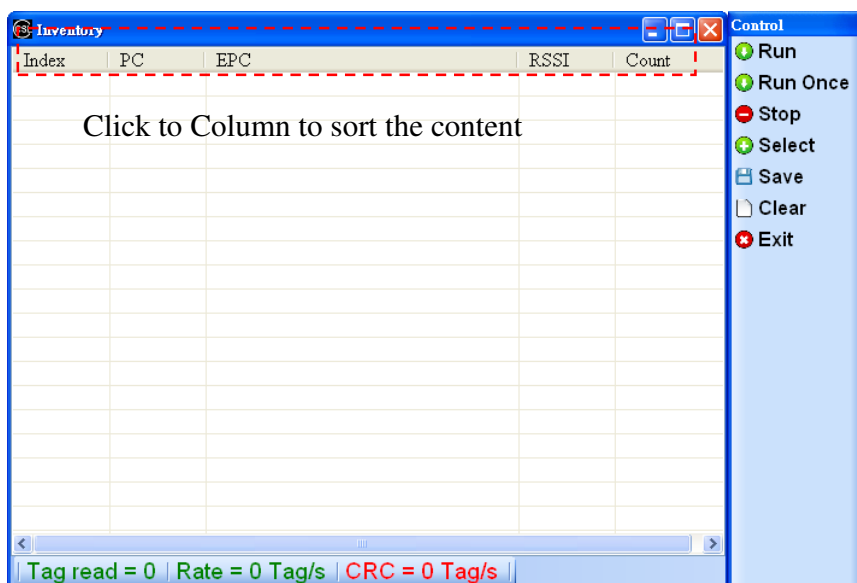
In main menu of the CS203 CALLBACK API DEMO program, the configuration information of the reader is shown and you can select the various functions.



C. Inventory

This page demonstrates the tag inventory functions for reading tags continuously with the RSSI value and read count.

Click the “Run” button to start reading tags.



- ← Run continue inventory
- ← Run inventory once times
- ← Stop inventory
- ← Select tag
- ← Save tag to file
- ← Clear list
- ← Exit program

D. Read/Write

This page demonstrates the function of reading and writing different memory banks of a selected tag.

Click on the “Click Here to select a tag” to scan for and select the tag you want to access.

Read and Write

Clear

Click Here to select a tag

KILL EPC 0 Offset

ACC TID 1 Count

PC USER PWD

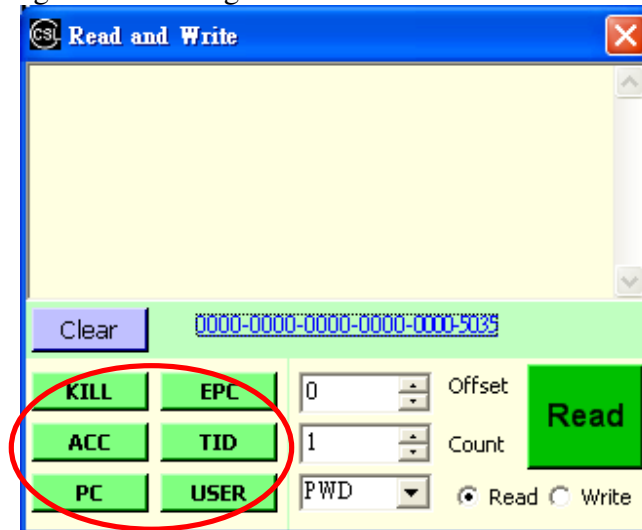
Read Write

Inventory

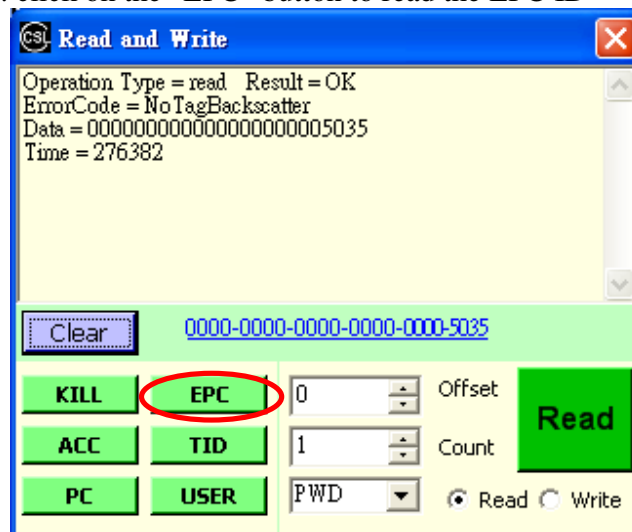
Index	PC	EPC	RSSI	Count
0	3000	33333333333333333333333333333333	62.4	23
1	3000	100000000000000000000000401	78.4	6
2	3000	3005FB63AC1F3841EC880467	62.4	16
3	3000	AD94250042F90B8D4A000052	58.4	6
4	3000	0000000000000000000000402	71.2	10
5	3000	43333333333333333333333333333333	64.8	11
6	3000	FFFFFFFFFFFFFFFF00000000	76.0	18
7	3000	99999999999999999999999999999999	63.2	21
8	3000	AD8A20004531A1961F0000A0	61.6	8
9	3000	1005182006ABCDEF0002437D	61.6	10
10	3000	04100800000000000000002222	54.4	11
11	3000	875AAAAAAAAAAAAAAAAAAAAA	72.8	12
12	3000	300833B2DDD9014035050000	72.0	21
13	3000	77777777777777777777777777777777	71.2	12
14	3000	1005182006ABCDEF00024379	51.2	2
15	3000	AD8A2000453199901C00009F	80.8	12
16	3000	9999999999999999999999AAAAAA	67.2	10
17	3000	AD94250042F8F1934B00004F	64.8	10
18	3000	20000000000000000000000134	75.2	12

Tag read = 49 | Rate = 117.5 Tag/s | CRC = 25.1 Tag/s

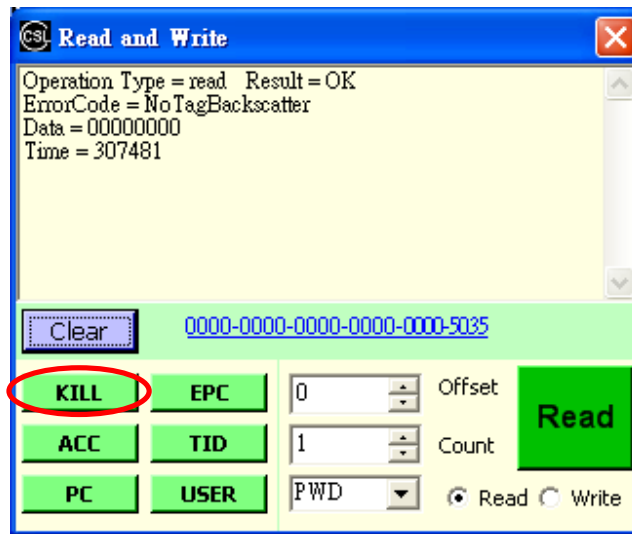
After the tag is selected, you can click on the left hand side buttons to read the corresponding data on the tag.



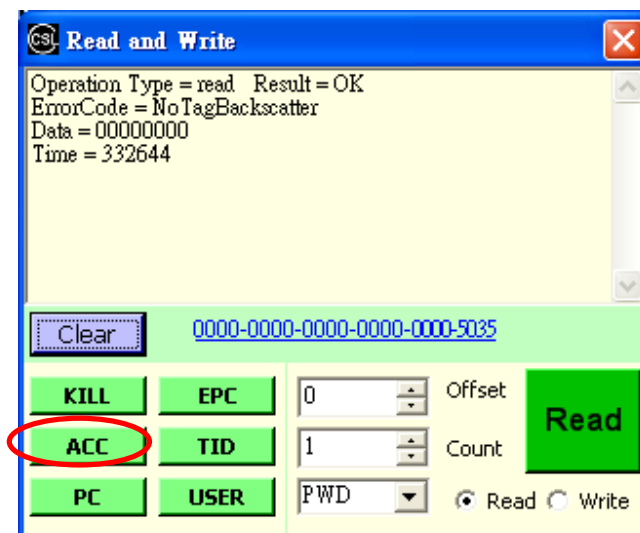
Read EPC: click on the “EPC” button to read the EPC ID



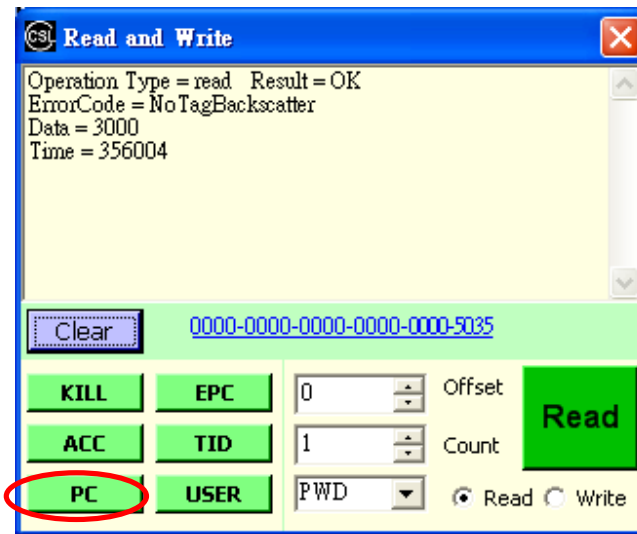
Read Kill Password: click on the “Kill” button to read the kill password



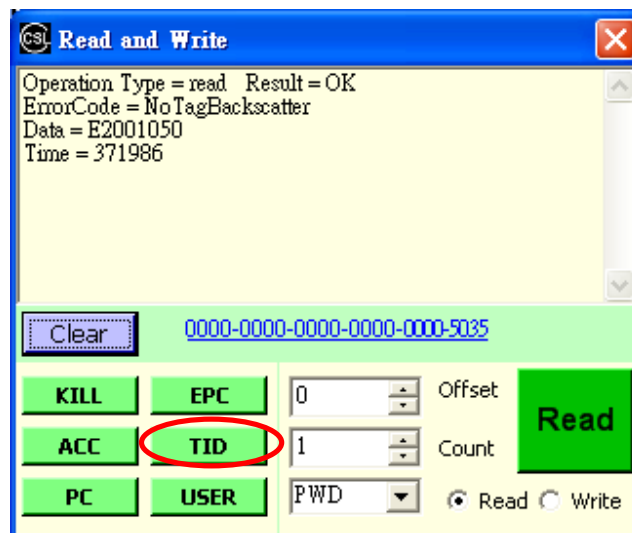
Read Access Password: click on the “ACC” button to read the access password.



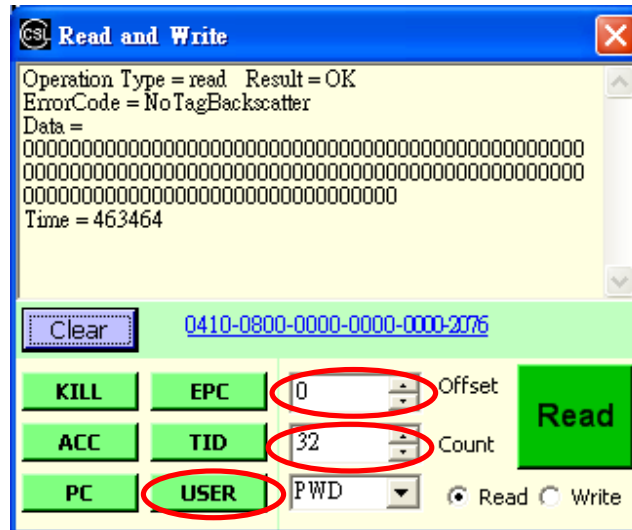
Read Protocol Control (PC): click on the “PC” button to read the PC value.



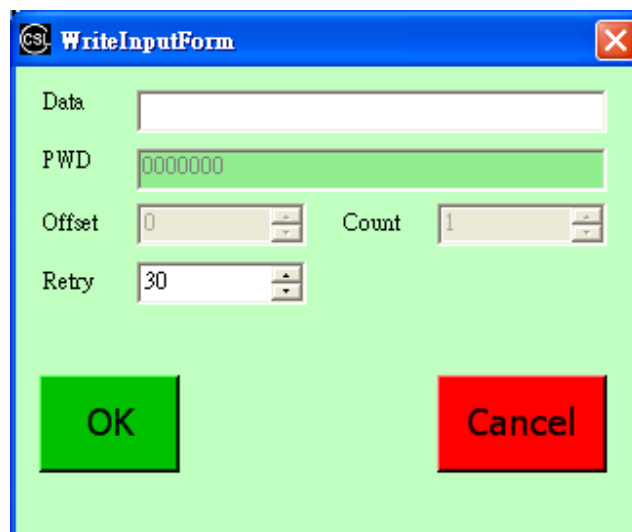
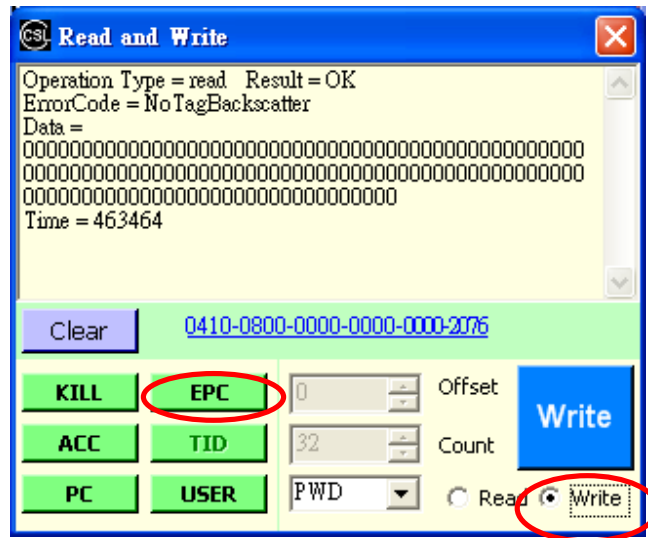
Read TID Value: click on the “TID” button to read the TID value.



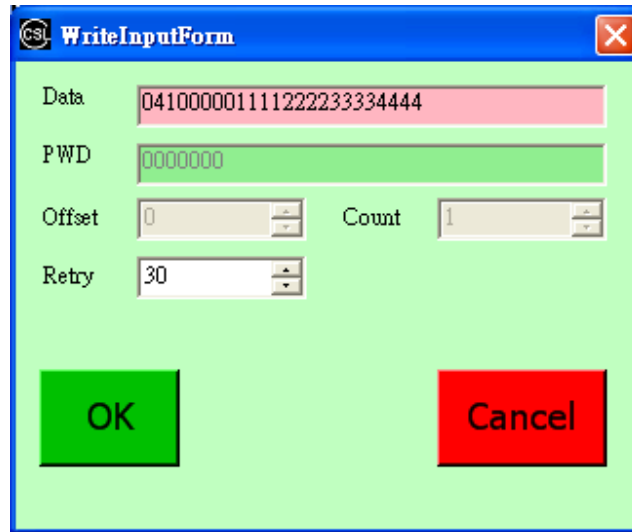
Read User Memory: Set the offset word and length of words you want to read for the user memory bank and click “USER” button to read it.



Write EPC: select “Write” and click on “EPC” button to enter the write EPC page

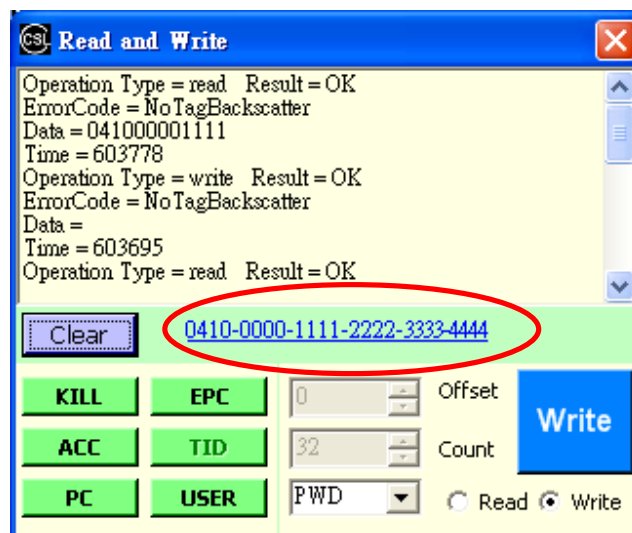


Input the new EPC ID in the “Data” field and then click “OK” button



The **WriteInputForm** dialog box contains the following fields and controls:

- Data:** A text field containing the hexadecimal value `041000001111222233334444`.
- PWD:** A text field containing `0000000`.
- Offset:** A numeric field set to `0`.
- Count:** A numeric field set to `1`.
- Retry:** A numeric field set to `30`.
- Buttons:** A green **OK** button and a red **Cancel** button.

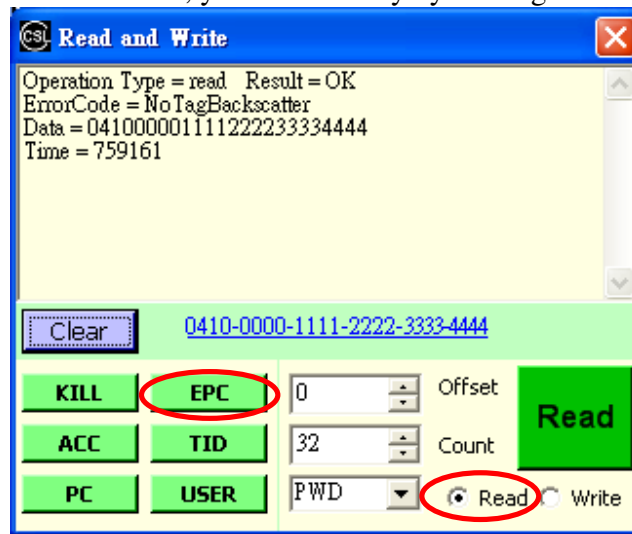


The **Read and Write** dialog box displays the following information:

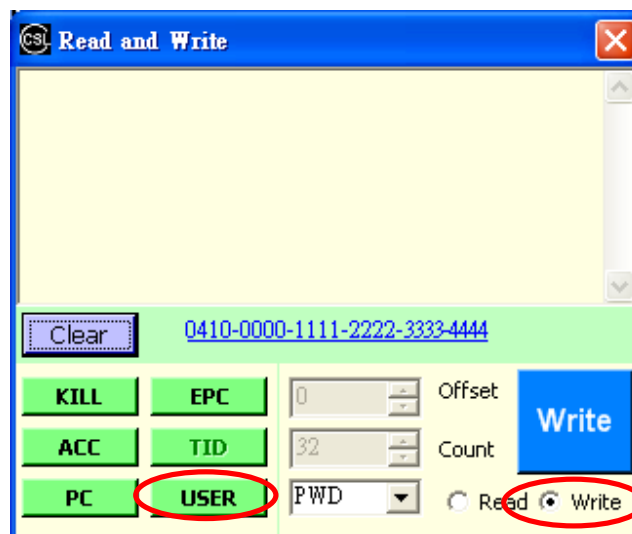
- Log:**
 - Operation Type = read Result = OK
 - ErrorCode = NoTagBackscatter
 - Data = 041000001111
 - Time = 603778
 - Operation Type = write Result = OK
 - ErrorCode = NoTagBackscatter
 - Data =
 - Time = 603695
 - Operation Type = read Result = OK
- Clear:** A button to clear the log.
- Display:** The hexadecimal value `0410-0000-1111-2222-3333-4444` is shown and circled in red.
- Buttons:**
 - KILL, ACC, PC:** Green buttons for device control.
 - EPC, TID, USER:** Green buttons for data selection.
 - Offset:** A numeric field set to `0`.
 - Count:** A numeric field set to `32`.
 - PWD:** A dropdown menu.
 - Read/Write:** Radio buttons with **Write** selected.
 - Write:** A large blue button to execute the write operation.

If write success, not error will show on the screen.

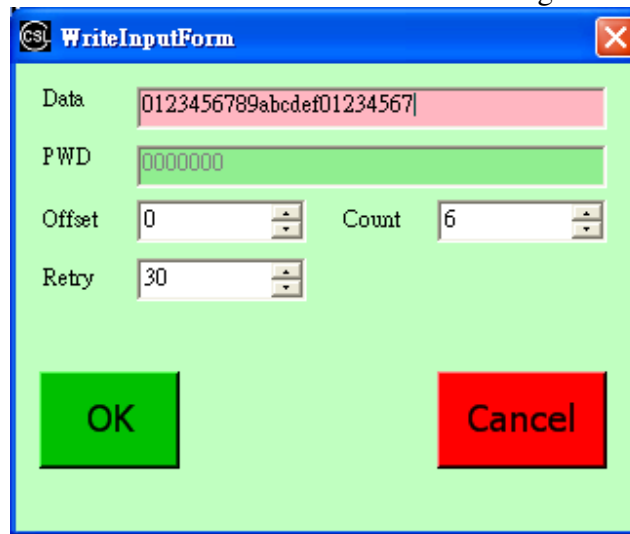
After the EPC is written, you could verify by reading the EPC ID again



Write User Memory: select “Write” and click on “USER” button to enter the write user memory page.

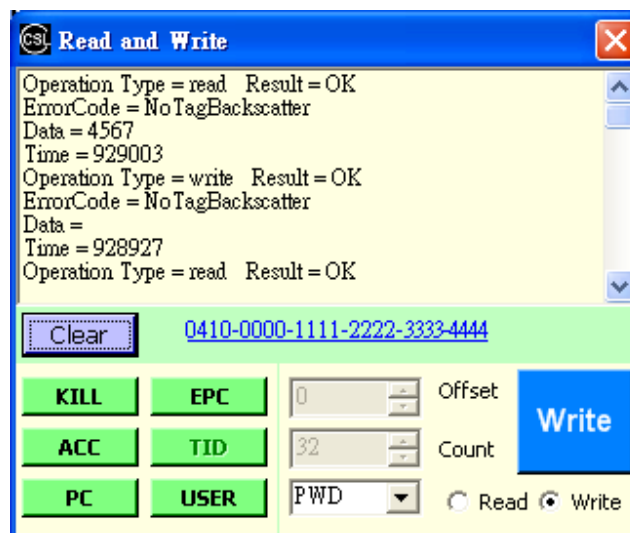


Select the offset word and length of words you want to write, then input the data into “Data” field and click “OK” button to write the tag.



The **WriteInputForm** dialog box is used for writing data to a tag. It features a blue title bar with the CSL logo and a close button. The main area has a light green background. It contains the following fields and controls:

- Data:** A text input field containing the string "0123456789abcdef01234567".
- PWD:** A text input field containing "0000000".
- Offset:** A numeric input field with a spinner, set to "0".
- Count:** A numeric input field with a spinner, set to "6".
- Retry:** A numeric input field with a spinner, set to "30".
- Buttons:** A green "OK" button and a red "Cancel" button at the bottom.



The **Read and Write** dialog box displays the results of tag operations. It has a blue title bar with the CSL logo and a close button. The main area has a light yellow background. It includes the following elements:

- Log Area:** A text area showing the following log entries:
 - Operation Type = read Result = OK
 - ErrorCode = NoTagBackscatter
 - Data = 4567
 - Time = 929003
 - Operation Type = write Result = OK
 - ErrorCode = NoTagBackscatter
 - Data =
 - Time = 928927
 - Operation Type = read Result = OK
- Clear Button:** A button to clear the log.
- Tag ID:** A text field displaying "0410-0000-1111-2222-3333-4444".
- Buttons:** A green "KILL" button, a green "EPC" button, a green "ACC" button, a green "TID" button, a green "PC" button, a green "USER" button, and a blue "Write" button.
- Offset and Count:** Two numeric input fields with spinners. "Offset" is set to "0" and "Count" is set to "32".
- Operation Type:** Radio buttons for "Read" and "Write". The "Write" radio button is selected.

After writing the user memory, you can verify by reading the user memory again.

The screenshot shows a software window titled "Read and Write" with a blue title bar and a red close button. The main area is a yellow text box displaying the following information:

```

Operation Type = read  Result = OK
ErrorCode = NoTagBackscatter
Data = 0123456789ABCDEF01234567
Time = 967280
    
```

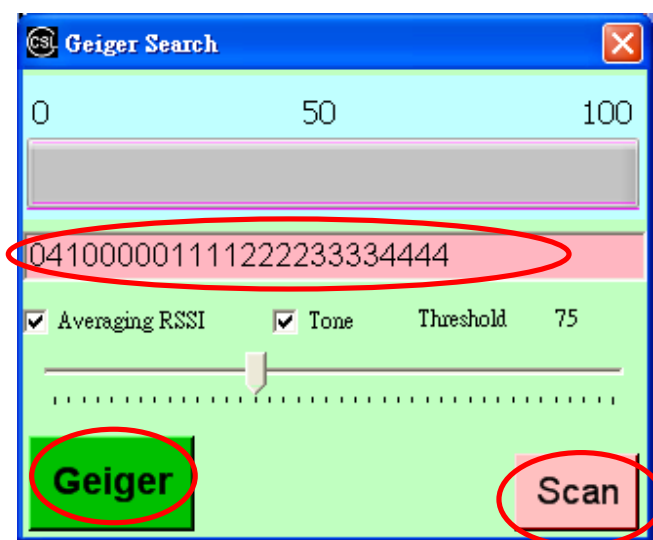
Below the text box is a green bar containing a "Clear" button and a blue link "0410-0000-1111-2222-3333-4444".

At the bottom, there are several controls:

- Buttons: "KILL", "EPC", "ACC", "TID", "PC", "USER".
- Fields: "Offset" (0), "Count" (6), and a dropdown menu set to "PWD".
- Radio buttons: "Read" (selected) and "Write".
- A large green "Read" button.

E. Geiger Counter Search

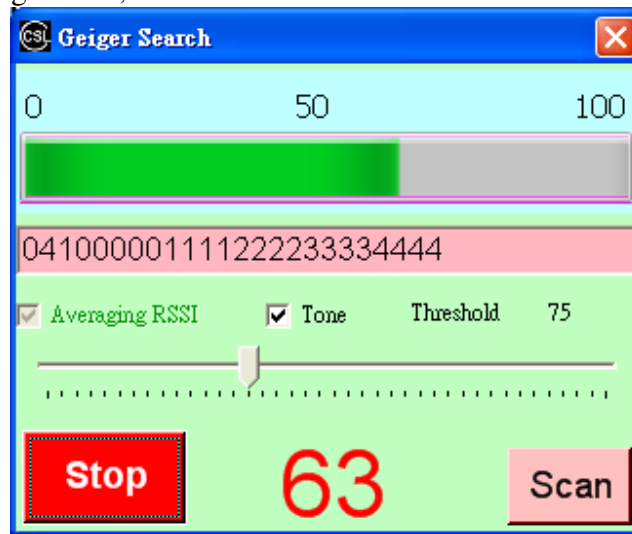
This page demonstrates the Geiger counter tag search mode. Input the EPC ID of the tag or scan a tag you want to search and then click the “Geiger” button.



Index	PC	EPC	RSSI	Count
0	3000	33333333333333333333333333333333	62.4	23
1	3000	1000000000000000000000000401	78.4	6
2	3000	3005FB63AC1F3841EC880467	62.4	16
3	3000	AD94250042F90B8D4A000052	58.4	6
4	3000	000000000000000000000000402	71.2	10
5	3000	43333333333333333333333333333333	64.8	11
6	3000	FFFFFFFFFFFFFFFF00000000	76.0	18
7	3000	99999999999999999999999999999999	63.2	21
8	3000	AD8A20004531A1961F0000A0	61.6	8
9	3000	1005182006ABCDEF0002437D	61.6	10
10	3000	0410080000000000000000002222	54.4	11
11	3000	875AAAAAAAAAAAAAAAAAAAAA	72.8	12
12	3000	300833B2DD9014035050000	72.0	21
13	3000	77777777777777777777777777777777	71.2	12
14	3000	1005182006ABCDEF00024379	51.2	2
15	3000	AD8A2000453199901C00009F	80.8	12
16	3000	99999999999999999999999999999999	67.2	10
17	3000	AD94250042F8F1934B00004F	64.8	10
18	3000	200000000000000000000000134	75.2	12

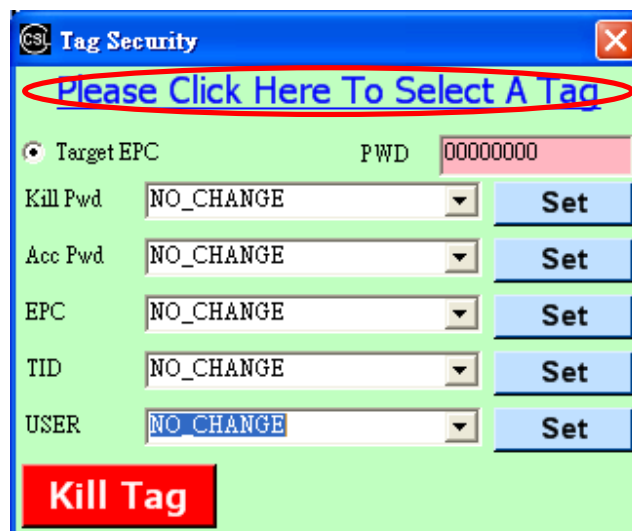
Tag read = 49 | Rate = 117.5 Tag/s | CRC = 25.1 Tag/s

When the tag is seen, it shows the RSSI value.



F. Tag Security

This page demonstrates the tag security operations (lock, unlock and kill)



Inventory				
Index	PC	EPC	RSSI	Count
0	3000	33333333333333333333333333333333	62.4	23
1	3000	100000000000000000000000401	78.4	6
2	3000	3005FB63AC1F3841EC880467	62.4	16
3	3000	AD94250042F90B8D4A000052	58.4	6
4	3000	0000000000000000000000402	71.2	10
5	3000	43333333333333333333333333333333	64.8	11
6	3000	FFFFFFFFFFFFFFFF00000000	76.0	18
7	3000	99999999999999999999999999999999	63.2	21
8	3000	AD8A20004531A1961F0000A0	61.6	8
9	3000	1005182006ABCDEF0002437D	61.6	10
10	3000	04100800000000000000002222	54.4	11
11	3000	875AAAAAAAAAAAAAAAAAAAAA	72.8	12
12	3000	300833B2DD9014035050000	72.0	21
13	3000	77777777777777777777777777777777	71.2	12
14	3000	1005182006ABCDEF00024379	51.2	2
15	3000	AD8A2000453199901C00009F	80.8	12
16	3000	9999999999999999999999AAAAAA	67.2	10
17	3000	AD94250042F8F1934B00004F	64.8	10
18	3000	200000000000000000000000134	75.2	12

Tag read = 49 | Rate = 117.5 Tag/s | CRC = 25.1 Tag/s

CSL Tag Security

041000001111222233334444

Target EPC

PWD 00000000

Kill Pwd

NO_CHANGE

Set

Acc Pwd

NO_CHANGE

Set

EPC

NO_CHANGE

Set

TID

NO_CHANGE

Set

USER

NO_CHANGE

Set

Kill Tag

Enter the access password in “PWD” and click “Set” button to set the security setting.

The image shows a software window titled "Tag Security" with a blue header bar. Below the header, a green bar displays the EPC "041000001111222233334444". The main area has a light green background and contains several configuration fields. The "Target EPC" field is selected with a radio button. The "PWD" field contains the value "12345678". Below this are five rows of settings: "Kill Pwd" set to "SECURED_ACCESSIBLE", "Acc Pwd" set to "NO_CHANGE", "EPC" set to "SECURED_WRITEABLE", "TID" set to "NO_CHANGE", and "USER" set to "NO_CHANGE". Each row has a blue "Set" button to its right. A red "Kill Tag" button is located at the bottom left of the window. Red circles highlight the "PWD" field and the "Set" buttons for "Kill Pwd" and "EPC".

Field	Value	Action
Target EPC	041000001111222233334444	
PWD	12345678	
Kill Pwd	SECURED_ACCESSIBLE	Set
Acc Pwd	NO_CHANGE	Set
EPC	SECURED_WRITEABLE	Set
TID	NO_CHANGE	Set
USER	NO_CHANGE	Set

Kill Tag

G. Setup

The “Setup” page allows the user to configure the country setting and link profile.

For FCC, you can only set link profile, power and country but not the fixed frequency channel.

The screenshot shows the 'CSL Setup' window with the 'General Options' tab selected. The 'Inventory' tab is also visible. The 'Profile' dropdown is set to '2', 'Power' is '300', and 'Country' is 'FCC'. The 'Dwell' is '3900' and 'Cycle' is '65535'. The 'LBT' checkbox is unchecked. The 'CS203 Address' section shows an IP address of '192.168.25.204' and a 'TCP Timeout' of '0'. A table at the bottom lists frequencies for indices 1 through 7.

Index	Frequency
1	902.75 MHz
2	903.25 MHz
3	903.75 MHz
4	904.25 MHz
5	904.75 MHz
6	905.25 MHz
7	905.75 MHz

Status Apply

The screenshot shows the 'CSL Setup' window with the 'Inventory' tab selected. The window is divided into several sections:

- General Options:**
 - Operation: CONTINUOUS (dropdown)
- TagGroup:**
 - Selected: ALL (dropdown)
 - Session: S0 (dropdown)
 - Target: A (dropdown)
- Singulation:**
 - Algorithm: DYNAMICQ (dropdown)
 - StartQValue: 7 (spin box)
 - Retry: 0 (spin box)
 - MinQValue: 0 (spin box)
 - MaxQValue: 15 (spin box)
 - MaxQueryRep: 10 (spin box)
 - Toggle: ☒
- Status:** A red text label.
- Apply:** A button at the bottom right.

For JPN, you can set fixed frequency channel and LBT.