



**OEM-HF-M840-ET**  
**13.56 MHz Embedded RFID Module**

**Test Software Manual**

iDTRONIC GmbH  
Ludwig-Reichling-Straße 4  
67059 Ludwigshafen  
Germany/Deutschland

Issue 1.1  
10/2014

Phone: +49 621 6690094-0  
Fax: +49 621 6690094-9  
E-Mail: [info@idtronic.de](mailto:info@idtronic.de)  
Web: [idtronic-rfid.com](http://idtronic-rfid.com)

Subject to alteration without prior notice.  
© Copyright iDTRONIC GmbH 2014  
Printed in Germany

## Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
<b>2</b>	<b>Operation procedure.....</b>	<b>5</b>
2.1	Device Connection .....	5
2.1.1	Hardware connection .....	5
2.2	Software connection.....	7
2.3	ISO14443 Type A operation .....	8
2.3.1	ISO14443A Search card .....	8
2.3.2	Card Halting operation.....	9
2.3.3	Read data of card blocks.....	9
2.3.4	Write data into card blocks.....	10
2.3.5	E-Wallet operation.....	10
2.4	Ultralight operation .....	11
2.4.1	Search Mifare Ultralight.....	11
2.4.2	Read data from page .....	12
2.4.3	Write data to page.....	13
<b>3</b>	<b>CPU card operation .....</b>	<b>14</b>
<b>4</b>	<b>ISO14443 Type B .....</b>	<b>15</b>
<b>5</b>	<b>ISO15693 Operation .....</b>	<b>16</b>
5.1	Inventory.....	16
5.2	Read block from block .....	16
5.3	Write data to block .....	17
5.4	Lock block .....	17
5.5	Write & Lock (AFI/DSFID).....	18
5.6	ISO15693 General Commands .....	18
5.6.1	Stay_Quiet .....	18
5.6.2	Select .....	18
5.6.3	RST to Ready .....	18
5.7	System info & Secure info.....	18

## **1 Introduction**

This testing demo is usable for any kinds of readers with TCP/IP interface, and support to operate read/write cards compliant with ISO/IEC 14443A/B, ISO/IEC 15693 Standards, etc.

This DEMO is just for testing used, other specific app or request on function button, please refer to API documents, demo code and other second development files for your own program, or contact our sales for customization.

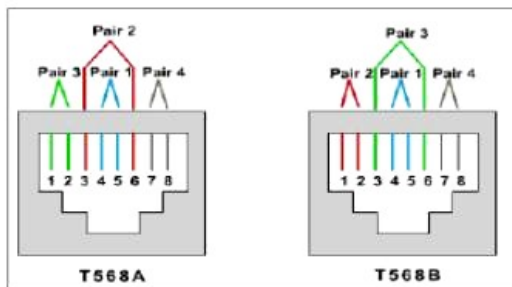
## 2 Operation procedure

### 2.1 Device Connection

#### 2.1.1 Hardware connection

A. Communication cable- crossover cable, for communication between PC-to-PC, PC-to-router, Router-to-Router, Switch-to-Switch, etc. This cable adopts T568A standard in one side, the other side is T568B, detail cabling definition, please refer to following:

Diagram showing both T568A and T568B cabling wire colors



T568A Cabling

Pin #	Pair #	Function	Wire Color	Used with 10/100BASE-T Ethernet?	Used with 100BASE-T4 and 1000BASE-T Ethernet?
1	3	Transmit	White/Green	Yes	Yes
2	3	Transmit	Green	Yes	Yes
3	2	Receive	White/Orange	Yes	Yes
4	1	Not used	Blue	No	Yes
5	1	Not used	White/Blue	No	Yes
6	2	Receive	Orange	Yes	Yes
7	4	Not used	White/Brown	No	Yes
8	4	Not used	Brown	No	Yes

T568B Cabling

Pin #	Pair #	Function	Wire Color	Used with 10/100BASE-T Ethernet?	Used with 100BASE-T4 and 1000BASE-T Ethernet?
1	2	Transmit	White/Orange	Yes	Yes
2	2	Transmit	Orange	Yes	Yes
3	3	Receive	White/Green	Yes	Yes
4	1	Not used	Blue	No	Yes
5	1	Not used	White/Blue	No	Yes
6	3	Receive	Green	Yes	Yes
7	4	Not used	White/Brown	No	Yes
8	4	Not used	Brown	No	Yes

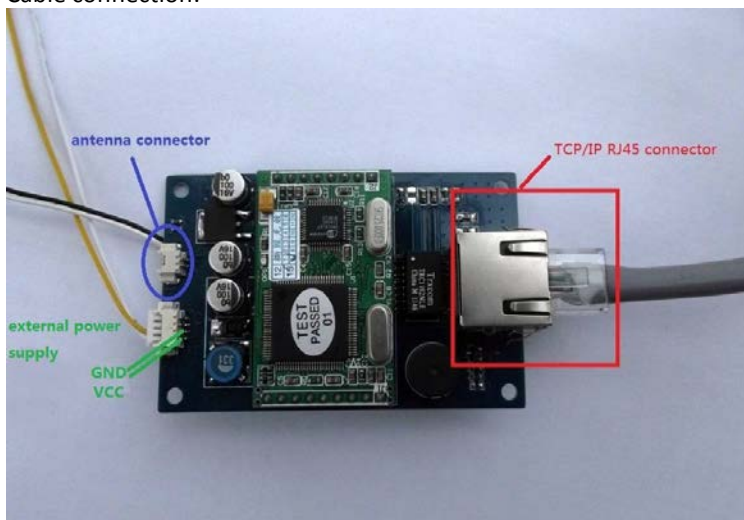
For connection between PC-to-Switch, or PC-to-Router, etc, please use Straight-Through Cable, and the cabling will comply with T568A or T568B standard in two sides at the same time.

Cabling definition are same as above diagram.

B. External power supply, PIN definition as picture below:



Cable connection:



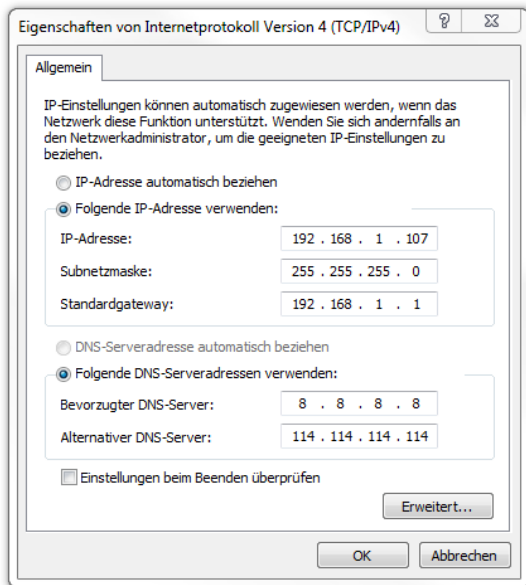
Cable needed: network cable, one connecting to PC, another is connected to Reader

Power supply: the sample is without PoE chipset, so needed external power supply by connecting two pins of GND and VCC, as above picture remark.

Antenna: external connection by 1.25mm Pitch connector

C. IP Address configuration

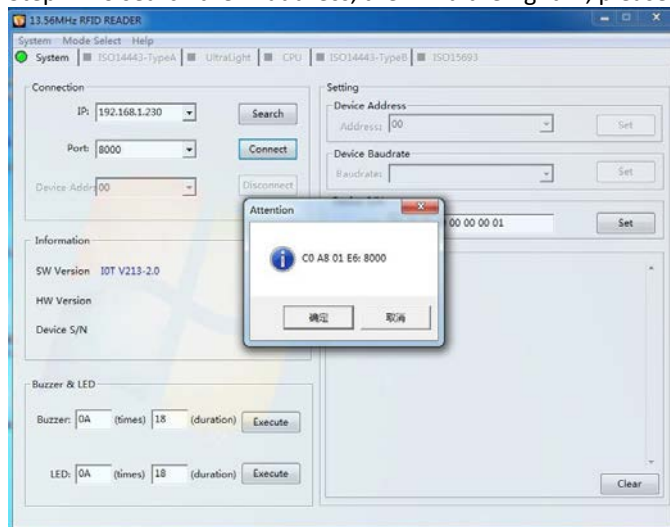
Please config the IP address of the Local connection and the reader to be in one network segment, the reader's segment is 192.168.1.230



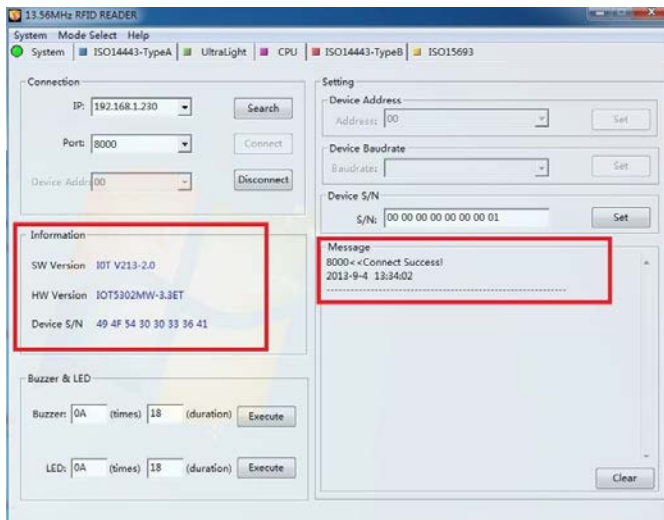
## 2.2 Software connection

After this configuration, please open the testing demo to connect the reader.

Step 1. To search the IP address, then find the right IP, please click to connect this IP address:



Successfully connection will display the right response and the information about the reader's hardware and software version:

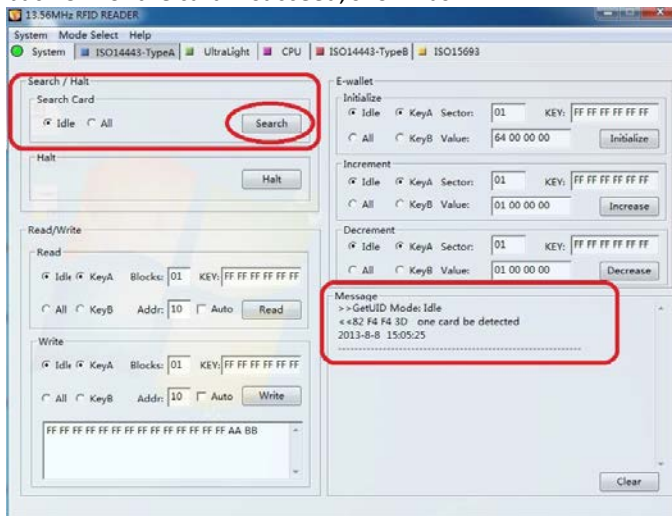


In this system setup, there are function buttons for changing working mode of Buzzer and LED, detail command definition and format, please refer to document of API parameter.

## 2.3 ISO14443 Type A operation

### 2.3.1 ISO14443A Search card

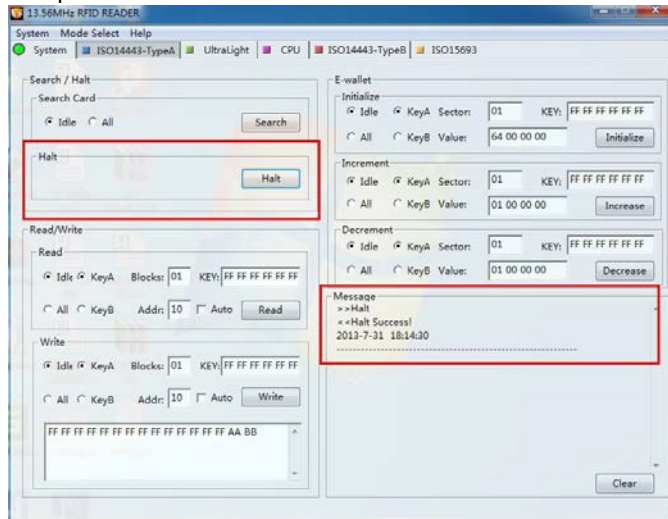
Please enter to "ISO14443A Type A" operation interface, and click "Search" to look for cards in the reading field, then get back UID of the card if succeed, shown as:





### 2.3.2 Card Halting operation

This process is to halt card:



### 2.3.3 Read data of card blocks

To operate card blocks information reading, card supporting types can be Mifare 1K, Mifare 4K, and the working mode optional with Idle mode and All mode.

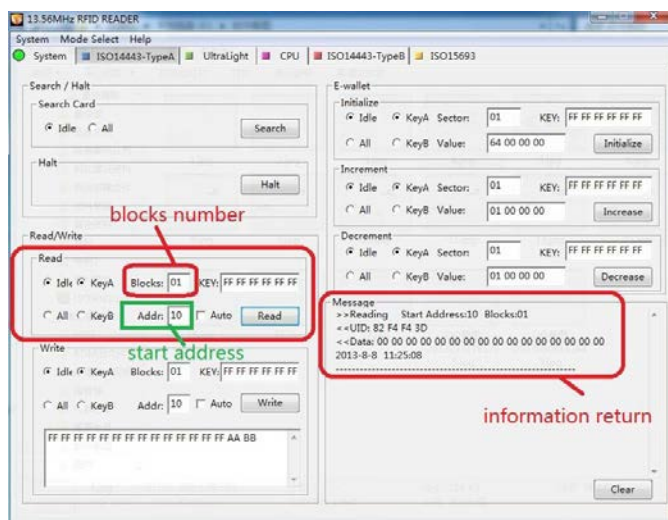
Remark:

- Under idle mode, all cards in the IDLE state shall respond synchronously with ATQA
- Under All mode, all the card in the IDLE or HALT state shall respond synchronously with ATQA.

“Blocks” dialog box stands for the blocks number to be read in one time, and the “Addr” is the start address of this reading, the “KEY” default is FF FF FF FF FF.

If the reading block/blocks is/are encrypted, please get and input the special key, see following:

If successfully, then Message box will return right information about the operation; if failed, then feedback with wrong code, please refer to Wrong code list to know their definition.



### 2.3.4 Write data into card blocks

To operate card blocks information writing, card supporting types can be Mifare 1K, Mifare 4K, and the working mode optional with Idle mode and All mode.

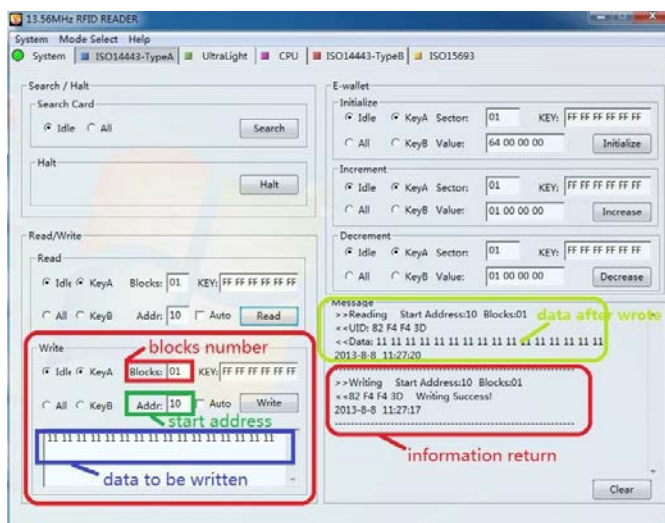
Remark:

- Under idle mode, all cards in the IDLE state shall respond synchronously with ATQA
- Under All mode, all the card in the IDLE or HALT state shall respond synchronously with ATQA.

“Blocks” dialog box stands for the blocks number to be written in one time, and the “Addr” is the start address of this writing, the “KEY” default is FF FF FF FF FF.

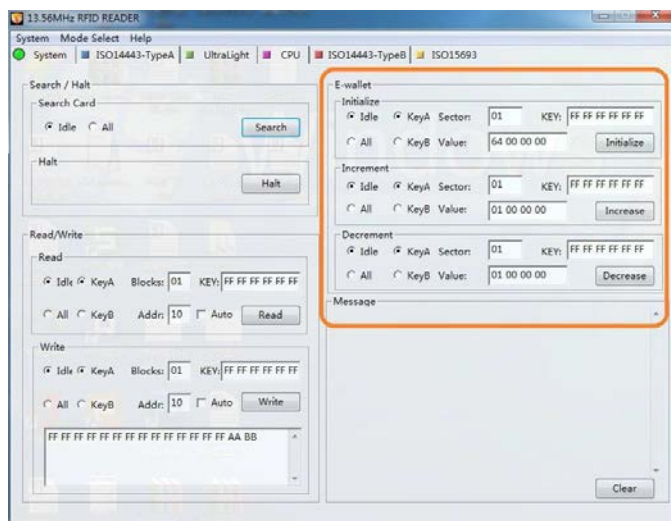
If the writing block/blocks is/are encrypted, please get and input the special key, see following:

If successfully, then Message box will return right information about the operation; if failed, then feedback with wrong code, please refer to Wrong code list to know their definition.



### 2.3.5 E-Wallet operation

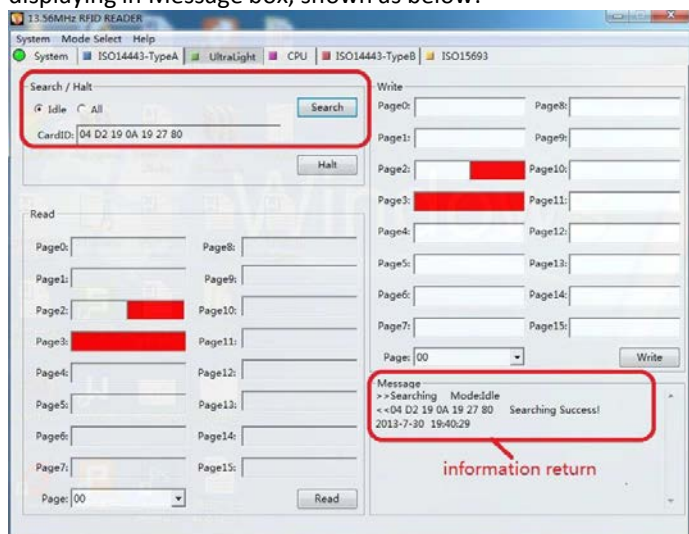
Here in this demo, we just provide a simple operation interface, to demonstrate the using procedure of E-wallet, which including initialize, increment, decrement, detail operating sectors and value command, please refer to use manual of the card.



## 2.4 Ultralight operation

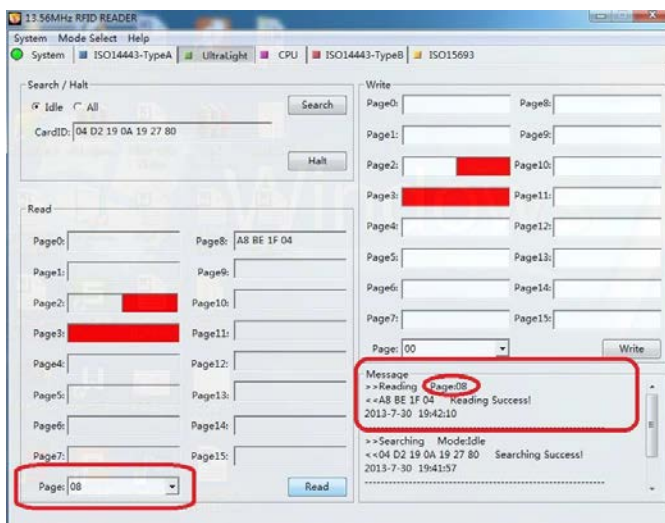
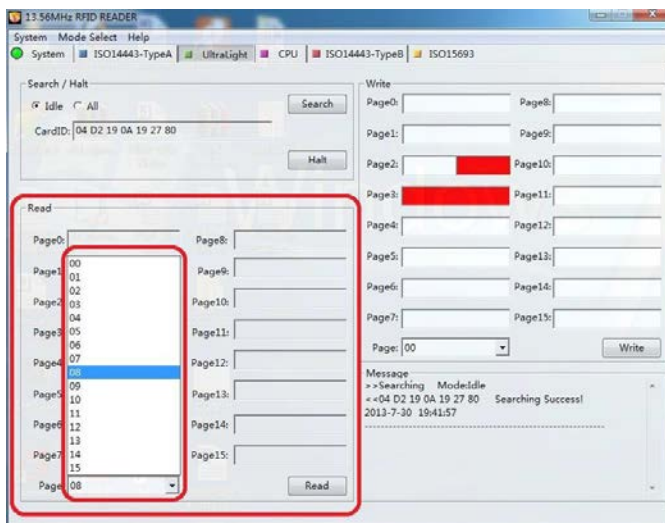
### 2.4.1 Search Mifare Ultralight

This procedure is need before reading or writing any specific page, just Click the “Search”, then you will get the CardID displaying in Message box, shown as below:



## 2.4.2 Read data from page

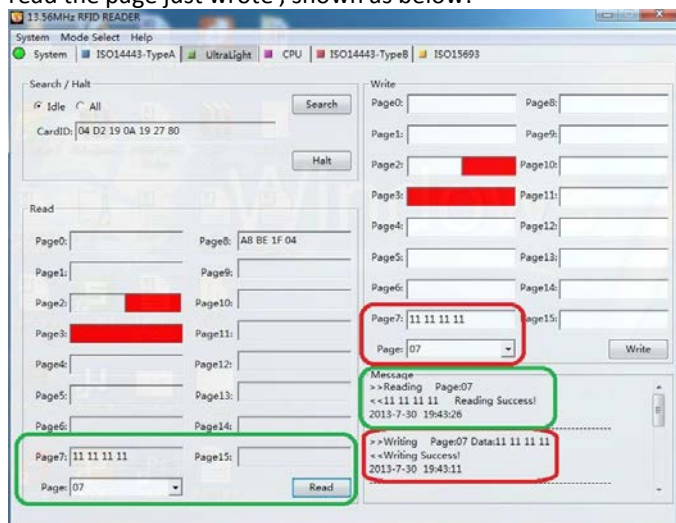
Please choose the page number in the drop-down list box, then click “Read”, then get the information of the paged chosen.



### 2.4.3 Write data to page

To write information to the page, select the page number to be written under drop-down list box, input data need to be written into (4 bytes), then click “Write”.

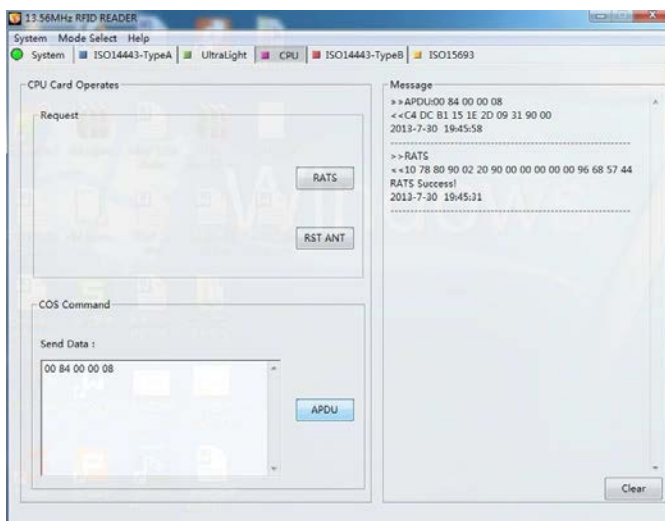
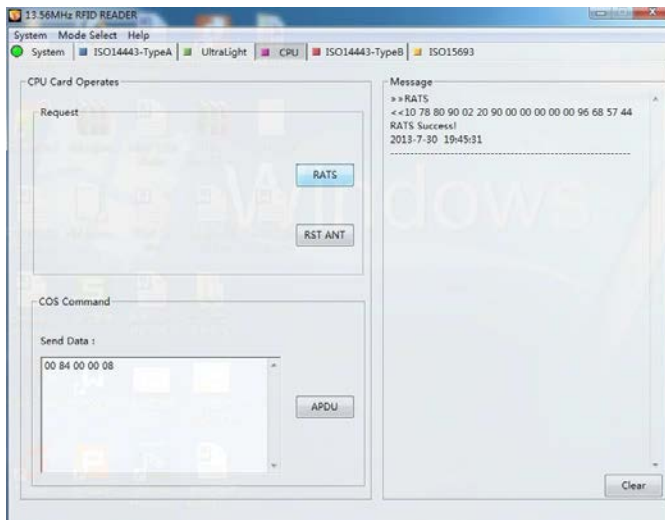
To check out if the writing success, you could see the information return in the Message box, also you could operate to read the page just wrote , shown as below:



### 3 CPU card operation

This interface is used for contactless CPU cards compliant with ISO 14443A standard, here we provide three function button, including RATS (Request for Answer to Select), RST ANT (Reset Antenna) and Send APDU.

These three functions are fit for all common types of contactless CPU card.



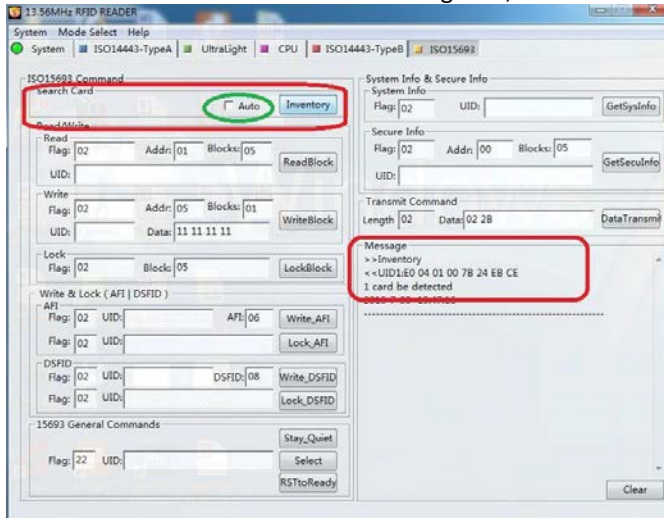
## **4 ISO14443 Type B**

Detail operation, there is other demo to do it.

## 5 ISO15693 Operation

## 5.1 Inventory

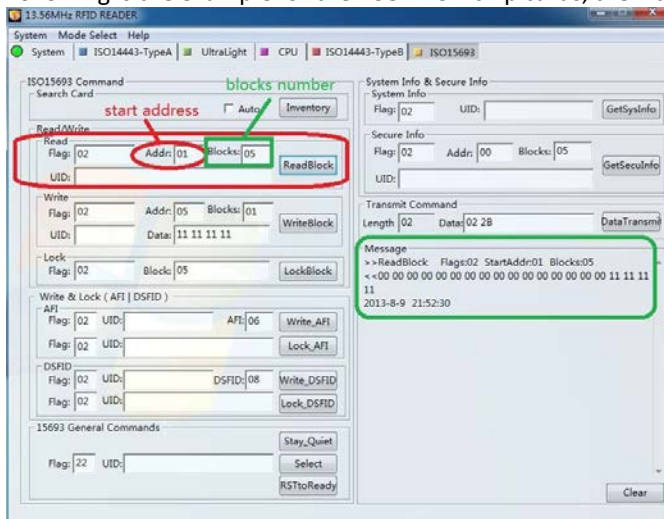
To search the card or cards in the reading field,



## 5.2 Read block from block

Please refer to user manual or different chip cards, to get the Flag value, then input the right one, and chose the start address and blocks number to be read.

Following is the example for the I CODE SLI chip cards, the Flag value is 02, as following:

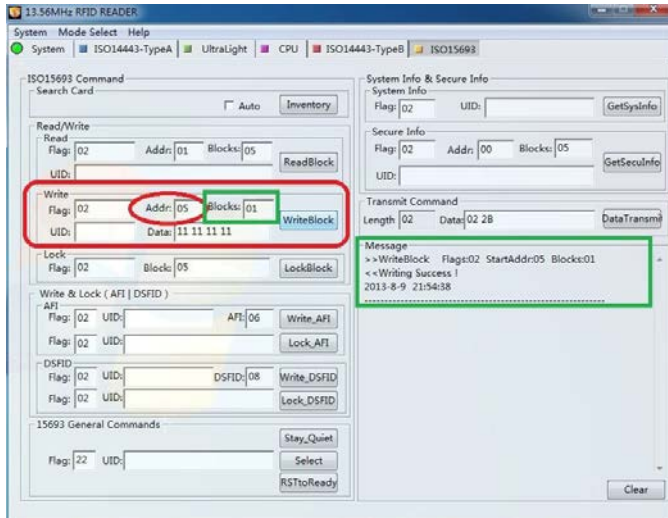




### 5.3 Write data to block

Please refer to user manual of different chip cards, to get the Flag value, then input the right one, and chose the start address and blocks number to be written.

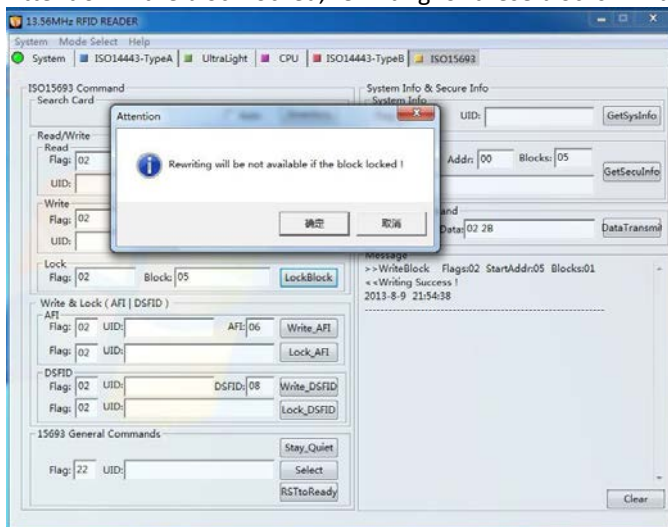
Following is the example for the I CODE SLI chip cards, the Flag value is 02



### 5.4 Lock block

Here needed to input the right Flag of the using card and choose the blocks number to be locked.

Attention: if the block locked, rewriting for these blocks will be not available any more.



## **5.5 Write & Lock (AFI/DSFID)**

Please refer to the ISO15693 standard.

## **5.6 ISO15693 General Commands**

### **5.6.1 Stay\_Quiet**

To make the card to be slept

### **5.6.2 Select**

To select the single card on the reading field

### **5.6.3 RST to Ready**

To wake-up the single card be stay\_quiet

## **5.7 System info & Secure info**

This is to get the system & secure information of the card, here this testing demo is available with three buttons of "GetSysInfo", "GetSecurInfo" and "Data Transmit"

Other incomplete functions or operation, please refer to API document for reference and develop the own software accordingly.