Radio Frequency Identification

ISO14443A+B+15693
User Manuals

Shenzhen RDM Tag Master Co.,Ltd

July 2007

Dear Users:

Thank you for trusting and supporting of the products of Shenzhen RDM TAG Master Co., LTD. We will sincerely provide you with comprehensive service and technical support.

This manual will introduce the detailed operation about RDM series reader. Before using , please have a detailed reading this manual and supporting details of delftse methode, so that this product will bring you more convenience and efficiency.

Your feedback and suggestions about our products are welcomed, we will sincerely service for you.

Shenzhen RDM Tag Master Co.,Ltd

Contents

1. Introduction

1.1 Intention of this manual

This Demo software is the presentation software for the reader produced by Shenzhen RDM Tag Master Co.,Ltd. Its interface is simple and be used for testing and acknowledging the relevant function of the RDM series reader. In addition, it also provides the user of RDM series reader with development routines and shortens the project development time.

1.2 Target Reader

Project Developer

Manufacturer of the card

Production Agent

1.3 Definition, Acronym and Abbreviations

ISO (International Standards Organization)

AFI(Application family indentifier) It is primary standard of Application card and stands for application type locked by VCD, and only satisfying the needed application standard can VICCs be selected from current VICCs.

DSFID (data storage format identifier) It points out that how the data form in EMS memory of VICC.DICC is written and locked by relevant command and should be written in one byte. Then if DSFID is allowed, the logical organization of data can be known immediately. But if VICC can't support DSFID program,VICC will answer it by " 0 ".

RFU (reserved for future use for ISO/IEC)

VICC (vicinity integrated circuit card)

VCD (vicinity coupling device)

ID card is the contactless only-read card of C12/13 .The transfer rate of reader data is 3.9 kbps(THRC12) or 6.62kbps(THRC13).

1.4 Reference

ISO/IEC 14443 Protocol

ISO/IEC 15693 Protocol

RDM Communication protocol V2.0(full version).doc

1.5 Environmental Requirement

This Demo Software Systems don't request high for configuration of the computer and it can be fitted for all kinds of current popular desktop and notebook computer.

Requirement for hardware:

1. The lowest levels of computer configuration should be Pentium;
2. The least memory should be 32M
3. The video memory should be 2M at least;
4. It should support of Monitor.

Requirement for software: It should embody the following software:

1. Microsoft Windows2000/XP/2003 operating systems
2. 1024*768 of Desktop resolution or higher
3. the necessary document of relevant language corresponding program

2. Software Configuration

2.1 Software installation

1. Unpack compressed package to the appointed place
2. Copy corresponding system files to system directory

2.2 Parameters configuration

When operating the program, first of all please have a check the cable port is opened or not. The detail operation please refer to the handling instruction.

3. General Introduction of Software

a) System Introduction

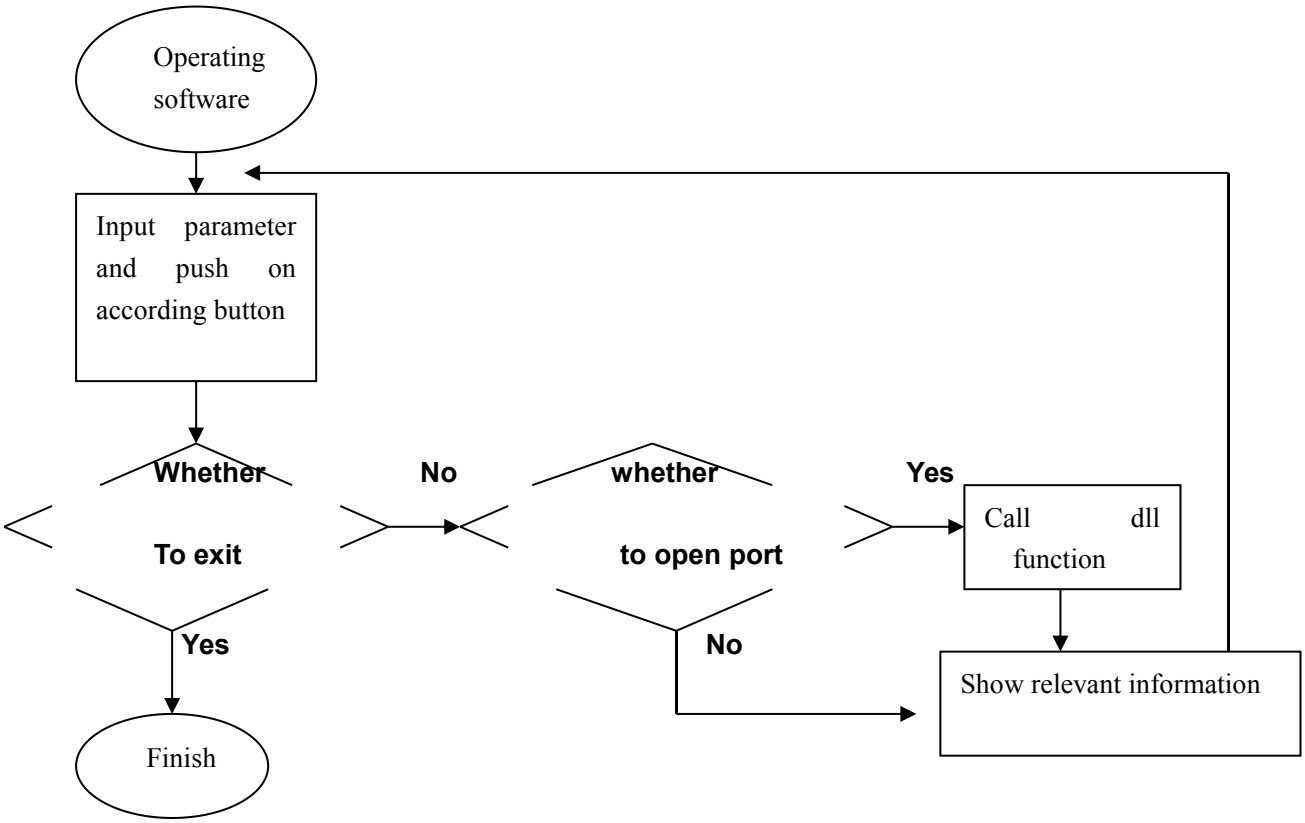
b) Welcome you to choose RDM series reader. The Demo system is the special presentation software for developing the reader made by our own company. This Demo system contains various Embedded Visual programming tools developed with Chinese and English bilingual kind of software together, such as Visual Basic, Visual C++, Embedded Visual C++ and so on.

c) The Demonstration software for any language development of the Demo system divide from

modules. Every module is put on a property page but for Embedded Visual C++ development software for PDA , and all property page are put on the layout structure of one property sheet. Due to the limited by itself of PDA devices, the Embedded Visual C++ development demonstration software for PDA will be connected by a command button between property pages. And each demonstration software contain two main part : The first part is to present with modules, which means to operate module with reader, that is, the property page of " Setup parameter" for Module One and the property page of " Readparam " for Module Two: The second part is to select module and is a charge part. According to different products sold by the user ,the demonstration software they obtain will be different and each module will be match one operating of one card. The specific module function please refer to instruction of this manual.

d) Introduction of System Flow

The Demonstration Software in the Demo move the the function of repository matching to one command button. For each presentation software operating ,please refer to the flow diagram as follows:



Picture One Demonstration software operating flow

4. Operating Instructions

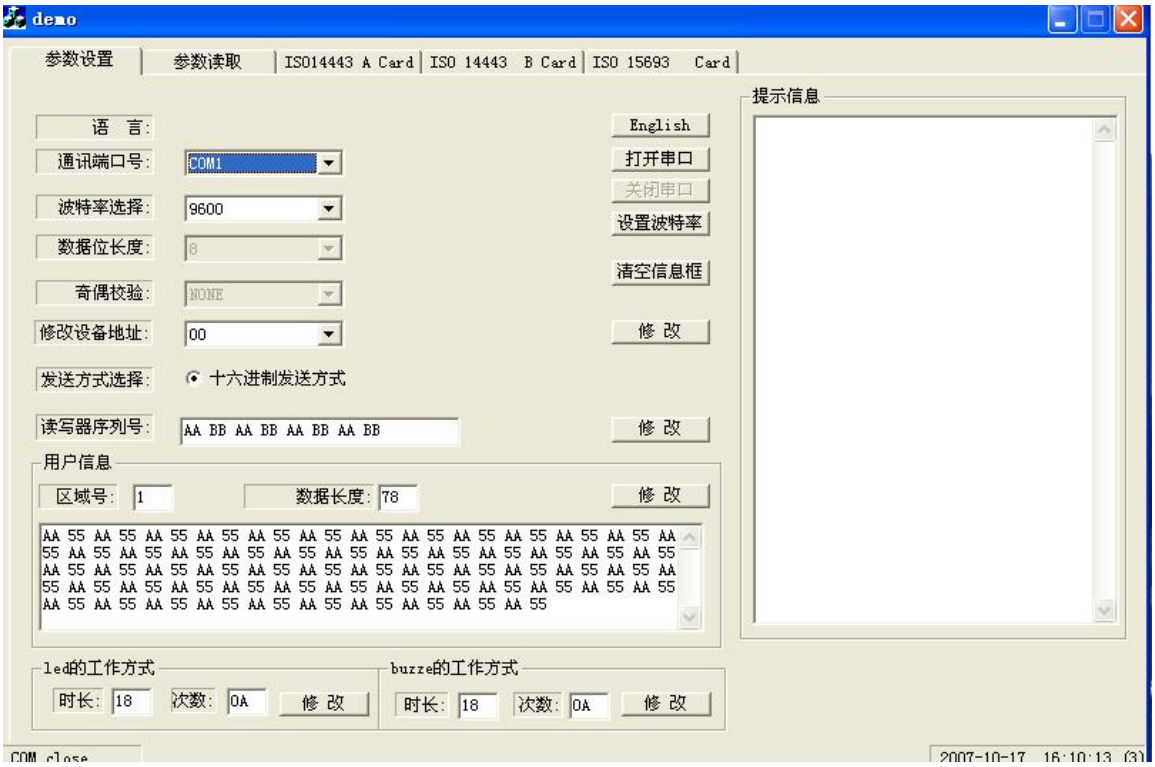
Different language development for the system are alike expert for slight difference. The following operating guideline of this manual takes demonstration software (default Chinese) developed for Visual C++ as an example.

a) Module One : The Property Page of " Parameter setup"

4.1.1 Function Description

Create Module for Property Page of “ Parameter setup”. This Module mainly includes the transfer of interface language and the relevant Parameter setup when the reader is working .The detail function please refer to the operating method of 4.1.3.

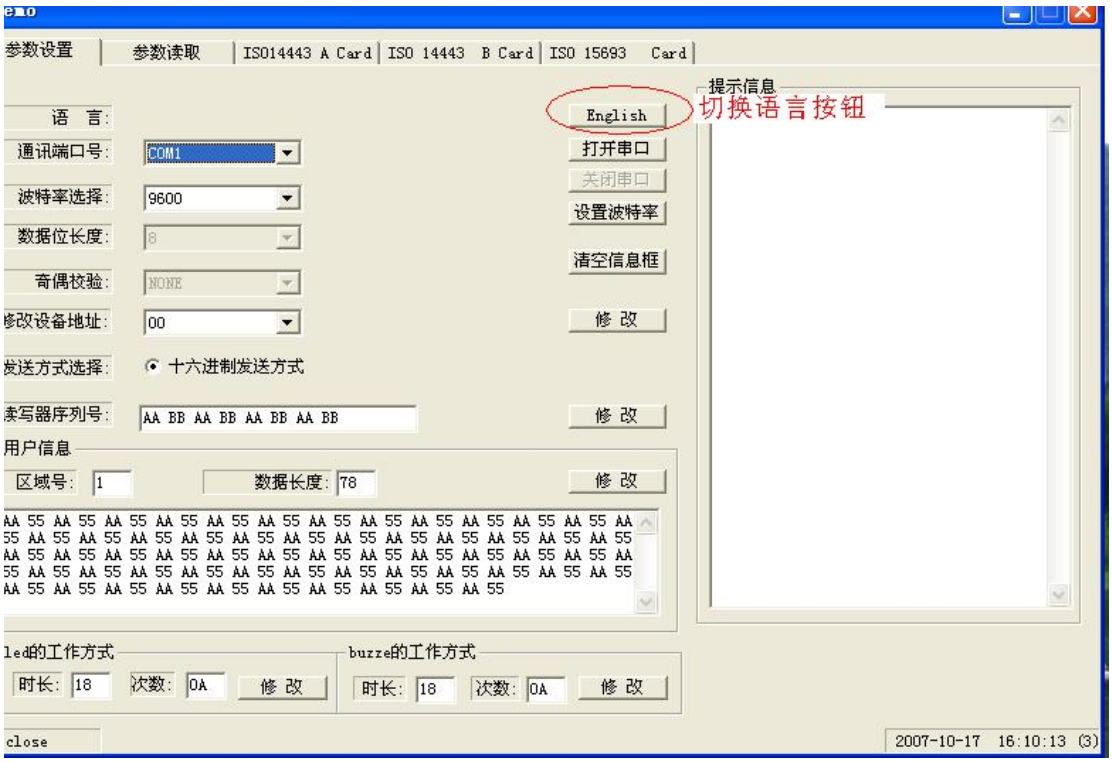
4.1.2 User Interface



Picture Two Chinese Operating Interface

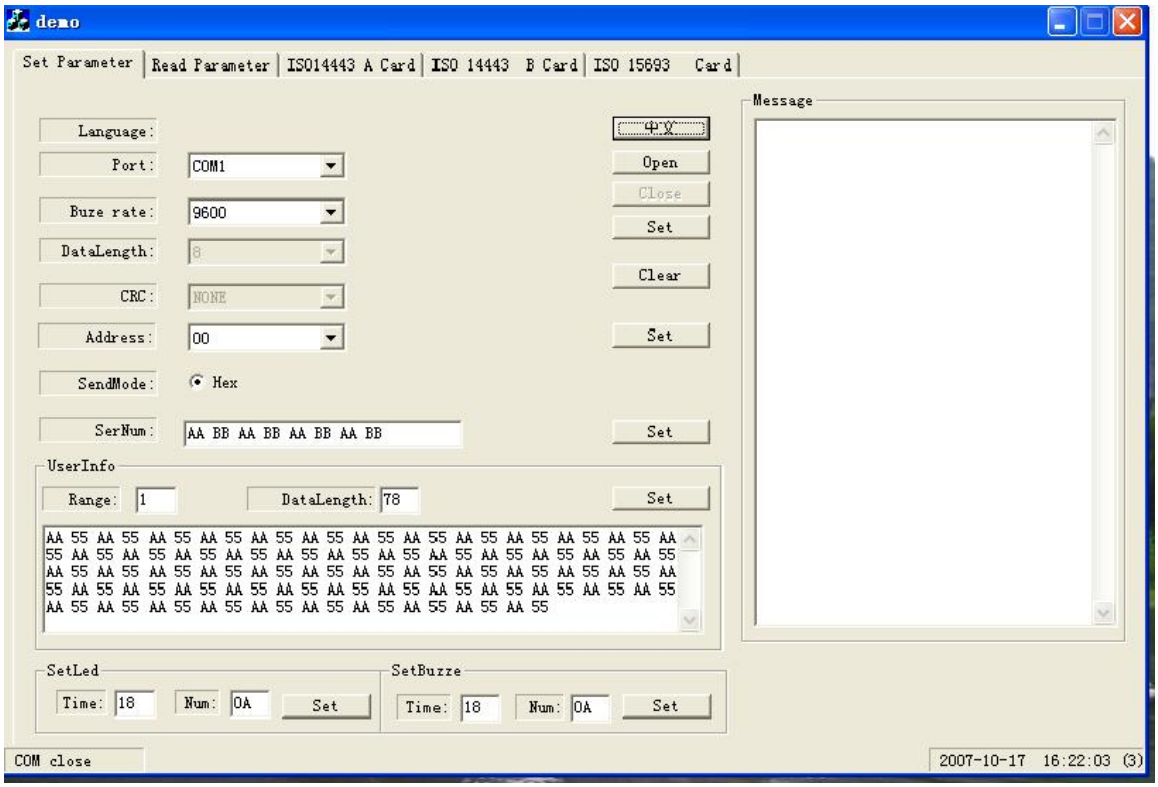
4.1.3 Method of Operating

4.1.3.1 Language Switching



Picture Three Chinese Interface with language switching button

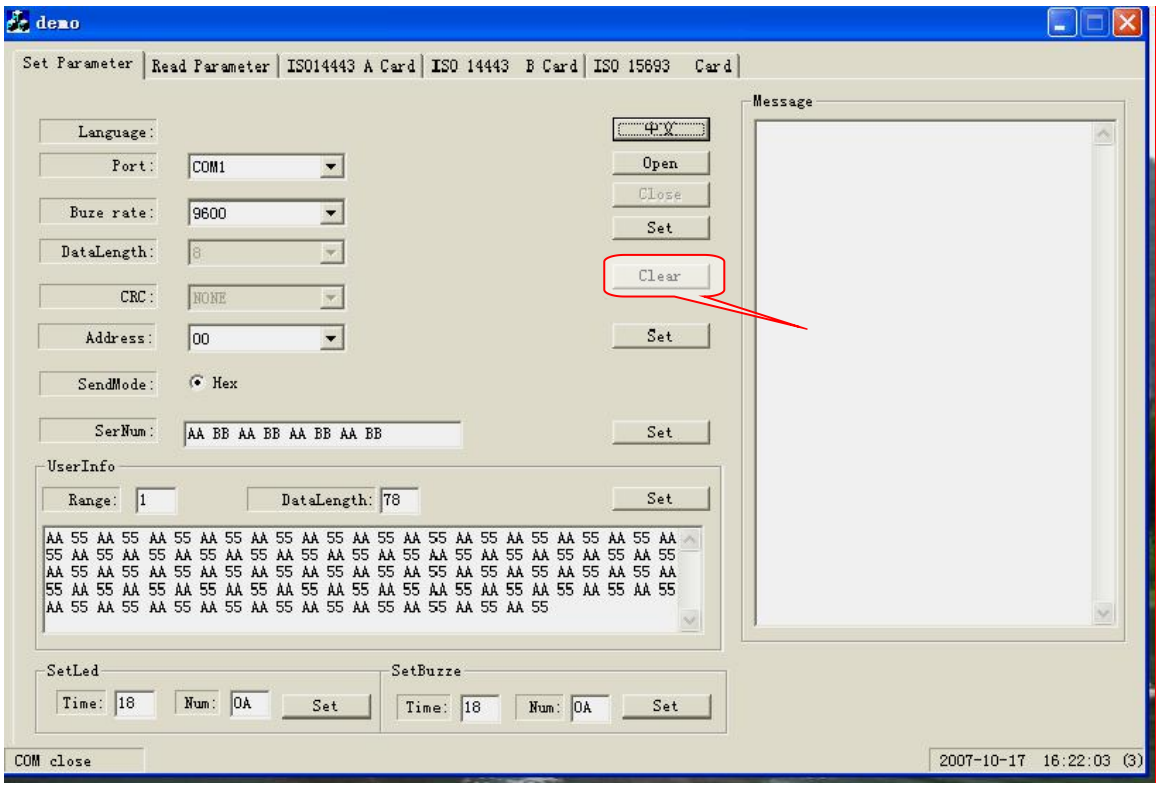
Please click the button in red of the picture ,the interface transferring will be shown as following **picture:**



Picture Four English Operating Interface

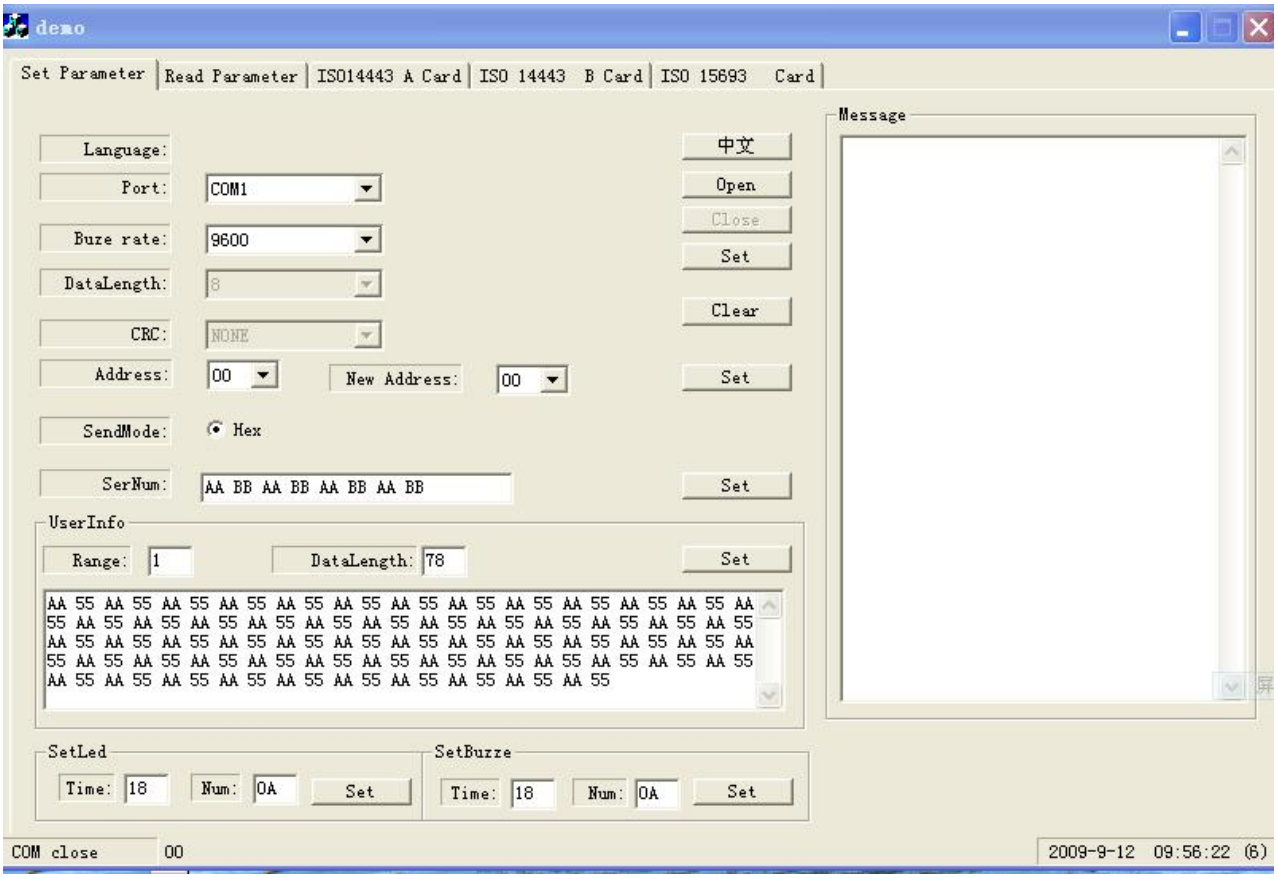
4.1.3.2 Open Port

Select the corresponding port number and baud rate on the Listbox, and click the button in red of the picture:

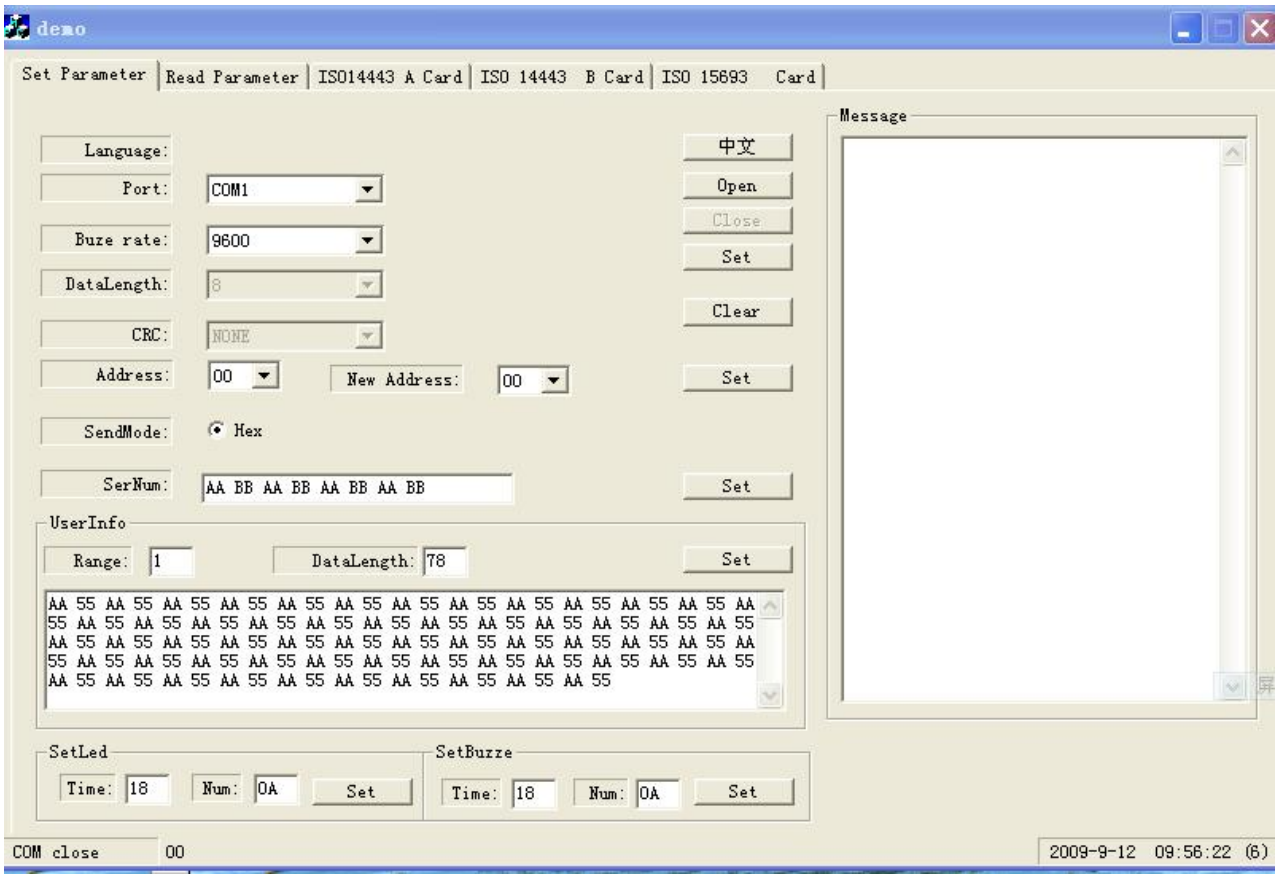


Picture Five English Interface with open port button reminder

Operate Result will be like as below:



Picture Six English Interface after operating port



Picture Seven Paremeter description Interface

4.1.3.4 Close Port

Please click the " close " button, the current operating condition will be shown on the Message box.

4.1.3.4 Setup Baud rate

The baud rate of the reader usually would be 9600bps,but it could be change by setup the baud rate button. Then after operating, the Message box will remind the current operating condition.

4.1.3.5 Empty the Message box

Please click the " Clear" button.

4.1.3.6 Modify the address of the reader

The general address of the reader is 00H and it can be changed by setup to modify the reader's address. Please select the right new address of the reader in the listbox, then click the matching " Set " button and there will be remind you the current operating condition in the Message box. The relevant position please refer to the Picture Seven.

NOTE: ① Please select the right reader address or chose the general address 00H when communicating.

4.1.3.7 Modify the serial number of the reader

Please write 8 bytes new serial number into Listbox and click the " Set " button, after that there will be reminding the current operating condition in the Message box .The relevant position please refer to the Picture Seven.

4.1.3.8 Modify the User's information in the Reader

Firstly, please input the relevant area code, data length and data in the message area of the User, and then click the corresponding " Set " button, after that the current operating condition will be shown on the Message box .Relevant position please refer to Picture Seven.

NOTE: ① The longest length of the input data for the each section should be 78H bytes.

4.1.3.9 Change the operating mode of the led light

Please input the relevant running time and times in the area of the operating mode of the led, then click corresponding " Set " button, after that the current operating condition will be shown on the Message box. Relevant position please refer to Picture Seven.

NOTE: ① The running time is the time duration what the led light on, the unit is 20 millisecond and limited in 1 second (1000 millisecond).The reminded time will be the time for led light off. So the largest value is 32H,when it is more than or equal to 32H,there can be seen the light lasting on. It is the time for led light one time.

The default value is 18: each time led light on is 24*20 millisecond and led light off is 26*20 millisecond.

② Times is the time for light off .

Such as : the running time is 18H,the time is 0AH, the indicator light will be 10 times off in 24*20 millisecond.

4.1.3.10 Change the operating mode of the buzzer

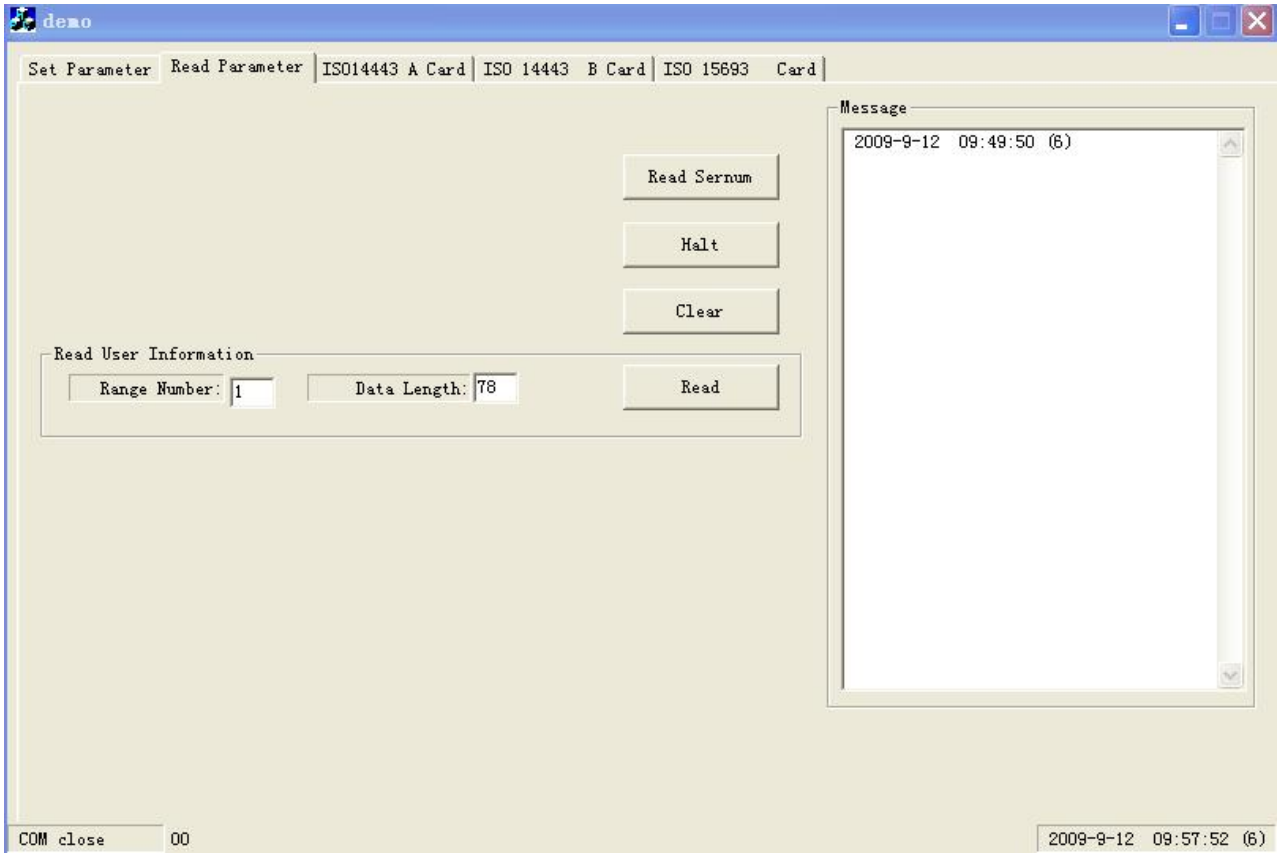
Its operating is similar as the led's. Omit here.

4.2 Property Page of " Read Parameter " for Module Second

4.2.1 Function Description

This module mainly contain with reading the reader's relevant information and detail function please refer to the operating mode of 4.2.3.

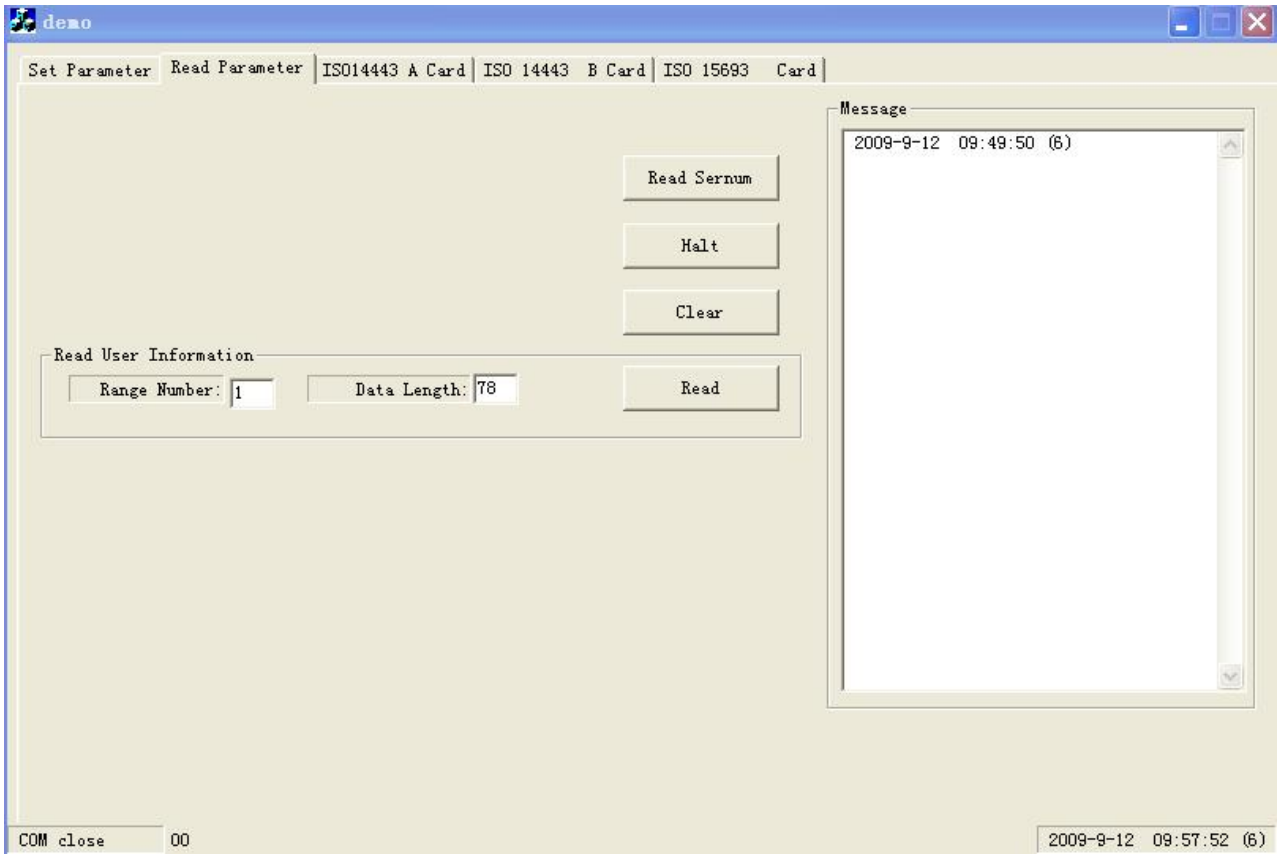
4.2.2 User interface



Picture Eight Property Page Interface of Read Parameter

4.2.3 Operating mode

4.2.3.1 Read serial number



Picture Night Description for property page interface of Read parameter

Click the “ Read ” button, the current reader’s serial number will shown on the Message box.

4.2.3.3 Read the User' Information

Firstly please input the relevant area code, data length and data, and then click the " Read " button, after that the current user's information of the reader will be shown on the Message Box. Relevant position please refer to Picture Night.

NOTE: ① The longest length of the input data for each section should be 78H bytes.

4.2.3.4 Empty the Message Box

Click " Clear " button.

4.3 Property Page of " ISO/IEC 14443 A Card" for Module Three

4.3.1 Function Description

This Module is able to read and write ISO/IEC 14443 A Mifare S50,S70 Card of Philips. We take S50 card as an example here and the detail function please refer to operating mode of 4.3.3.

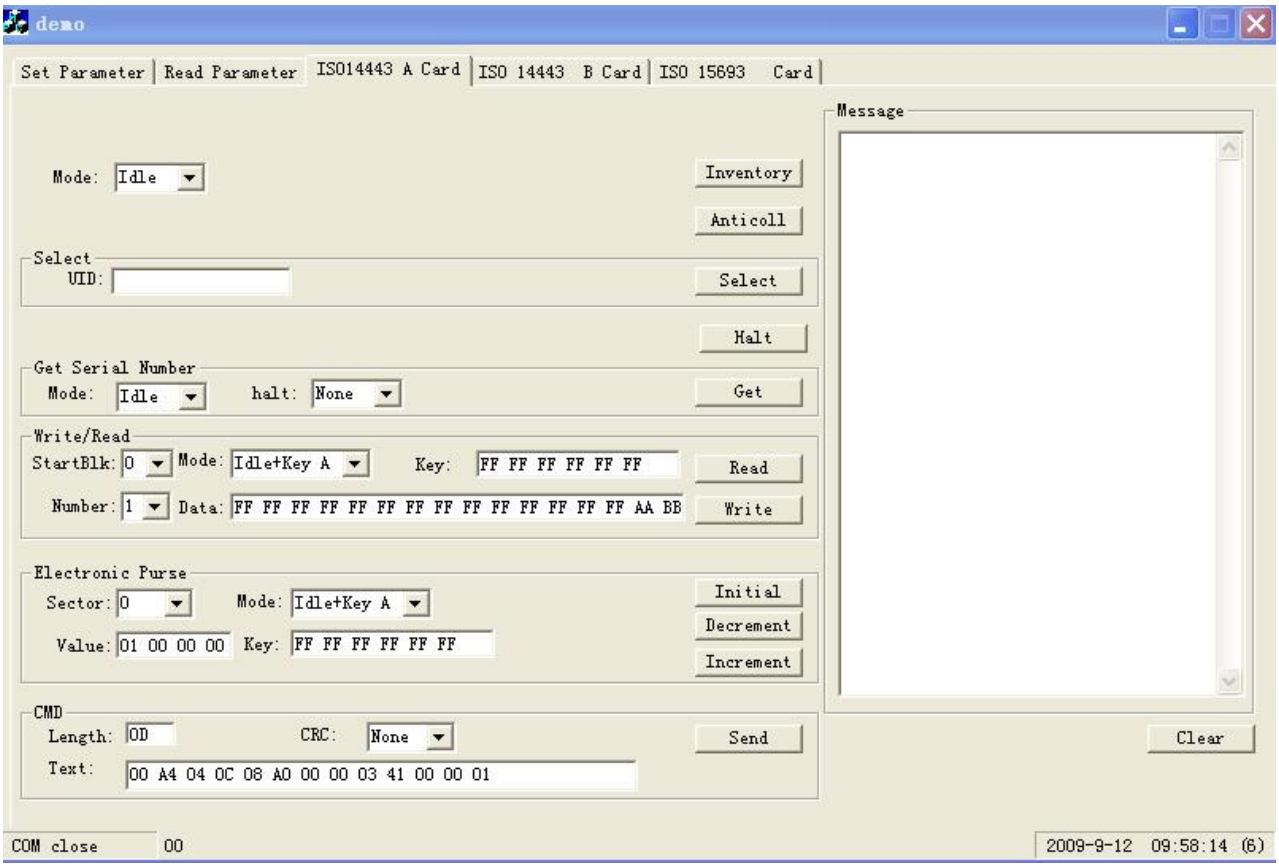
4.3.1.1 S 50 card Introduction

The memory capacity of Mifare one S50 card is 8192 bit ×1 word length (that is 1 K×8 word length),and it adopt EEPROM as storage medium. Its whole structure is divided into 16 sectors, which write as sector 0—15. Each sector has four blocks—block 0,block 1,block 2 and block 3. Each block has 16 byte and each sector has 16 byte×4=64 byte. And the block 3 of each sector (that is fourth block) contains with code A(6 byte), access control (4 byte) ,code B (6 byte) of this sector. It is a special block and other three block is common data block.

But as the block 0 of sector 0 is special and is the company code and has been immobilized. Therefore it is unchangeable.

Thereinto: the 0~3 byte is the serial number of the card, the 4 byte is the check digit of serial number , the 5 byte is the byte of the card capacity size., the 6,7 byte is the byte of the card style number ,that is Tagtype byte. Other byte will be defined according to the manufacturer.

4.3.2 User Interface



Picture Ten Property page interface of " ISO/IEC 14443 A Card"

4.3.3 Operating Mode

4.3.3.1 Seek card

Select the mode and click " Get " button, the Message Box will show of the type of current operating card.

Among the mode selected is divided into two parts, the detail as following:

All : Read multi-card method

Idle: Read one card method

Default mode is Idle.

4.3.3.2 Anti-collision

Before operating anti-collision with the card , it need to find card, then can be anti-collision. After that the 4 byte serial number of the current operating card will be shown on the Message Box.

4.3.3.3 Select card

Only operate finding card and anti-collision in turn with the card, then can select the card and 4 byte serial number of the current operating card will be shown on the Message Box after select card successfully.

4.3.3.4 Stay quiet

Only operate finding card, anti-collision and select card in turn with the card (the card should be put on the RF field of the card all the way) ,then can stay quiet with the card .The card will stop working temporary until it is moved out from the RF field of the reader.

4.3.3.5 Get serial number

Get the serial number of the operating card.

The select mode is the same as find card, and the Halt method as follows:

None: Only read serial number of card, not to operate with others;

Halt: Read the serial number as well operate stay quiet with the card at the same time.

4.3.3.6 Read card

Mode select, block number (current read block address, from block 0 to block 63,that is from 00H to 3FH) , blocks select(current need to read blocks, only can read four blocks at least once, the detail please refer to the document of S50), and input 6 byte key, then click “ Read “ button and the contents of the current reading card will be shown on the Message Box.

Due to the IC Chip structure of ISO/IEC 14443 A Card differ from sectors, and every sector have its own individual key. Therefore each time to read the blocks are those include in this sector, that is the maximum will be 4. And the starting block is that read from what block, for the details please refer to the document of S50 card. Among the mode select, there are two ways as follows:

Idle+Key A : Method of read single card with Key A

ALL + Key A: Method of read multi card with Key A

Idle + Key B: Method of read single with Key A

ALL + Key B: Method of read multi card with Key B.

4.3.3.7 Write card

The method of write card is similar with read card and it need to input the data into the block in the Data Box.

4.3.3.8 Initialize the sector as E-wallet

Firstly, please select sector number, mode, input key and initialization value, then click " Initialize " button and update the E-wallet of current sector. The update value should be input into the data of value.

For the mode and the key , please refer to Read data in the card of 4.3.3.6.

4.3.3.9 Decrement

Please select the card sector number and mode, input the value needed to decrement and the key. Then click " Decrement " button and decrement for the E-wallet of the current sector with the card.

The parameter information please refer to 4.3.3.8 "Initialize the sector as E-wallet"

4.3.3.10 Increment

Please select the sector number of the card and the mode, input the added value and key, then click " Increment " button and add value for the E-wallet of the current sector of the card.

The parameter information please refer to 4.3.3.8" Initialize the sector as E-wallet".

4.3.3.11 Transfer CMD

Firstly please choose CRC and input the length of sending text and the sending text, then click" Transfer CMD " button and increase the message in the empty space blew the red circuit shown as the Picture Night.

There are two optionals of the CRC, one is None (**not efficacy)** ,the other is CRC (**Cyclic Redundancy Check)**.

The length of text form by 2 bits hexadecimal number .

The sending text, each data formed by 2 bits hexadecimal number and the total data will be the value of this text.

4.3.3.12 Clear Message Box

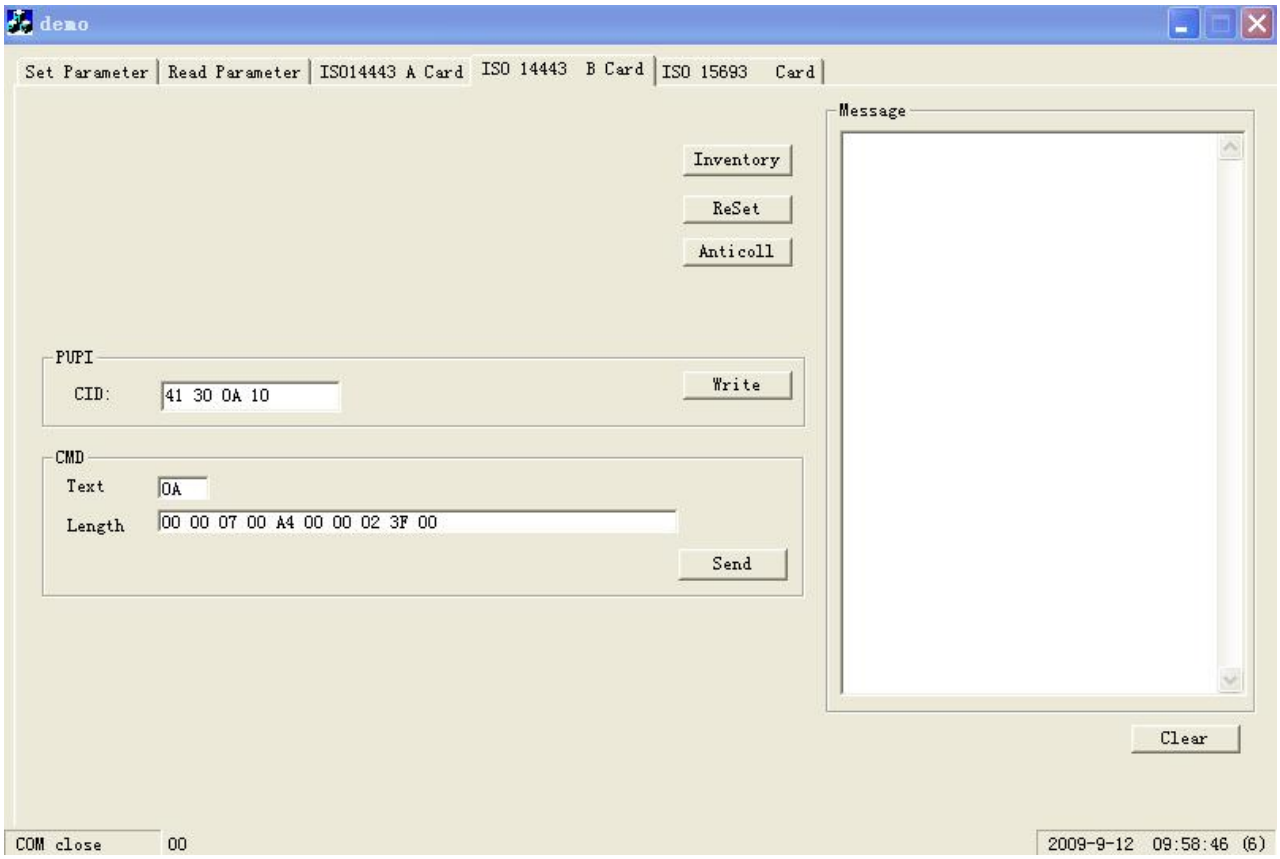
Click “ Clear “ button.

4.4 Module Four Property Page of “ ISO/IEC 14443 B Card”

4.4.1 Function Decription

This module mainly contains the information exchange between the reader and the Type B card of external meet ISO/IEC Standard, and it takes Simens card made of SLE66CL160S chip as the test card.. Due to the special initial IC structure of Type B card ,this module just have the most basic function, other advance function can be specially designed according to the specific structure of IC. If necessary, please kindly contact Shenzhen RDM Tag Master Co,.Ltd for the detail development information. And the detail function please refer to 4.4.3 operating method.

4.4.2 User Interface



Picture Eleven Property page interface of “ ISO/IEC 14443 B Card “

4.4.3 Operating method

4.4.3.1 Find card

Click “ Find “ button and increase the message in the empty space below the red circle of the Picture Night .

4.4.3.2 Reset

Click “ Reset” button and increase message in the empty space below the circle shown on Picture Night

4.4.3.3 Anti-collision

Click “ Anti-collision “ button and increase message in empty space below the red circle shown on the Picture Night

4.4.3.4 Allocate PUPI

Firstly please input CID and click “ Send “ button ,then increase message in empty space below the red circle shown on the Picture Night.

CID: formed by 4 times of 2 bits hexadecimal number

4.4.3.5 Transfer CMD

Firstly, please input the length of the text and the sending text, then click “ Transfer CMD “ button and increase the message shown on the Picture Night.

The length of text is formed by 2 bits hexadecimal number.

The sending text, each data formed by 2 bits hexadecimal number and the total data will be the value of this text.

4.4.3.6 Clear Message Box

Click “ Clear Message “ button and leaves the time of next line or blank which shown as the red circle on the Picture Night.

4.5 Module Property Page of ISO/IEC 15693 Card

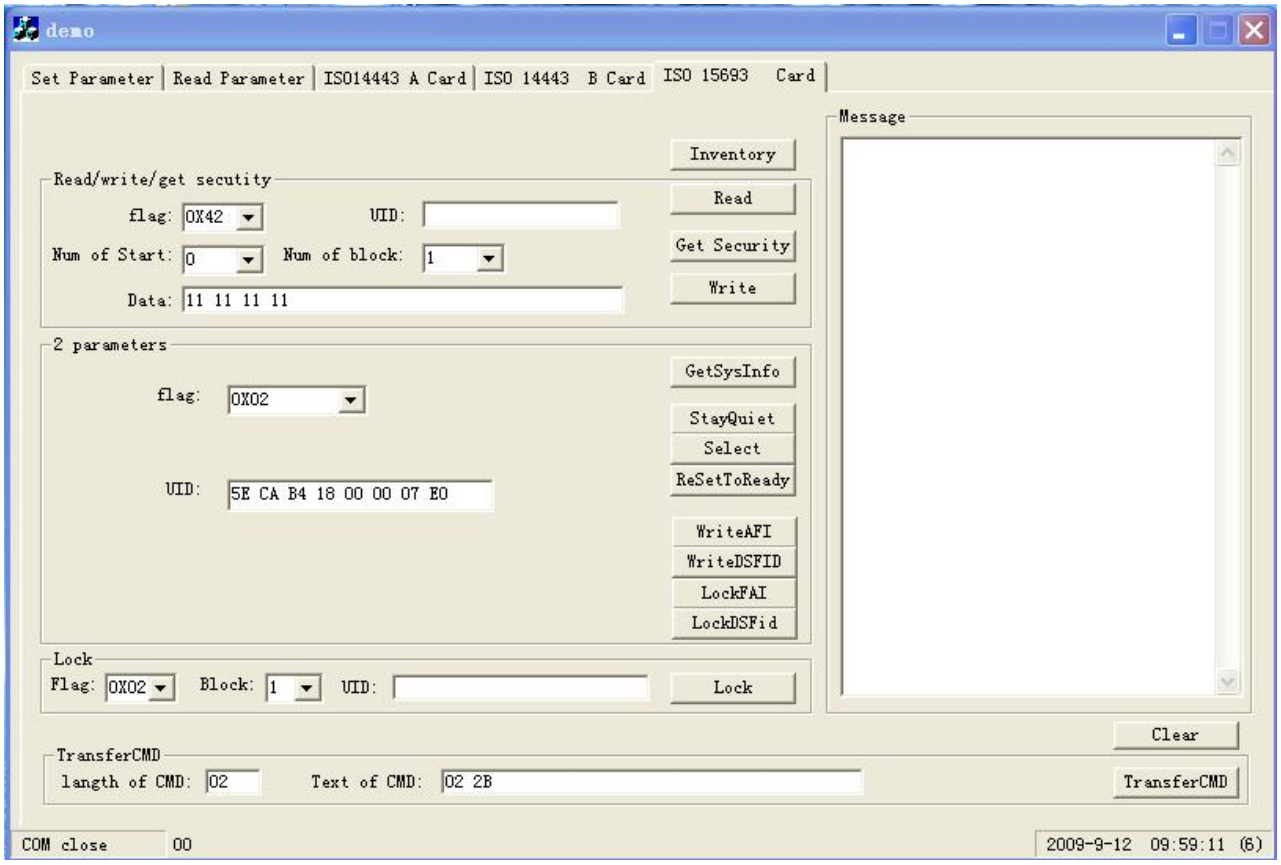
4.5.1 Function Description

This module mainly contains the information exchange between the reader and standard card of externally meet of ISO/IEC 15693. And it takes the Tag-it HF-I card of TI company as test card, the detail function please refer to 4.5.3 operating method..

4.5.2 TI Card description

TI Card 2K Byte EEPROM memory is divided into 64 block ,each block has 4 bytes and all blocks can be read and written, there is the global unique 64bit UID Number .

4.5.3 User Interface



Picture 12 Property page interface of ISO/IEC 15693 Card

4.5.4 Operating method

4.5.4.1 Find card

It can operate with single and multi-card at the same time, after that it will be back to the quantity and the number of the card.

4.5.4.2 Read card

First of all, please select flag, starting page and reading page, then input UID (basing on the flag), click “ Read card ” button and increase message in empty space below the red circle shown on the Picture Night.

There are many flag parameter and the details please refer to ISO/IEC Standard , the following are commonly using:

Two optionals 0x02 : when transfer CMD, please don’t input UID and each page returns 4 byte data, but there must be only one card in the reading area .

0x22: when transfer CMD, please input 8 bytes UID and each page return 4 byte data ,there can be several card in the reading area.

0x42: when transfer CMD, please don’t input UID and then each page returned should include 1 byte security status word and 4 byte data, but there must be one card in the reading area.

Starting page and reading page is formed by 2 byte hexadecimal number .

UID should be made up with 8 of 2 bits hexadecimal number.

4.5.4.3 Get security

Firstly please select flag, starting page and reading page, and input UID(basing on flag) ,then click “ Read ” button and increase message in the empty space below the red circle as the Picture Night.

There are many flag parameter and the details please refer to ISO/IEC 15693 Standard, the following are the commonly used:

Two optional 0x02: when transfer CMD, please don’t input UID and there should be one card in the reading area.

0x22: when transfer CMD, please input 8 byte UID and there can be several card I in the reading area.

0x42: Disabled..

The starting page and reading page are made up with 2 bits hexadecimal number.

4.5.4.4 Write card

Firstly please select flag, starting page and reading page, input UID (basing on flag) and write into information, then click “ write” button and increase message in the empty space below red circle as the Picture Night.

There are many flag parameter and the details please refer to ISO/IEC 15693 Standard, the following are the commonly used:

Two optionals 0x02: Disabled

0x22: Disabled.

0x42: using for writing card.

The starting page and reading card is formed by 2 bit hexadecimal number .

UID is made up with 8 of 2 bits hexadecimal number .

4.5.4.5 Get system information of the card

Firstly please select flag, input UID (basing on flag), then click “ GetSysInfo “ button and increase message in empty space below red circle as Picture Night.

There are many flag parameter and the details please refer to ISO/IEC 15693 Standard, the following are the commonly used:

Two Optionals 0x02 : when transfer CMD, please don’t input UID and there must be only one card in the reading area.

0x22: when transfer CMD, please input 8 byte UID and there can be several cards in the reading area.

0x42: Disabled .

UID is made up with 8 of 2 bits hexadecimal number.

4.5.4.6 Hibernate

Firstly please select flag and input UID (basing on flag), then click “ StayQuit” button and increase message in empty space below red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard, the following are commonly used :

The two optionals 0x02 : Disabled.

0x22: when transfer CMD, please input 8 bits UID and there can be several cards in reading area.

0x42: Disabled

UID is made up with 8 of 2 bits hexadecimal number .

4.5.4.7 Select card

Firstly please select flag and input UID (basing on flag) ,then click " Select " button and increase message in empty space below the red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard, the following are the commonly used:

The two optionals 0x02 : Disabled .

0x22: when transfer CMD ,please input 8 bits UID and there can be several cards in reading area.

0x42 : Disabled

UID is made up with 8 of 2 bits hexadecimal number.

4.5.4.8 Reset the card as ready condition

Firstly select flag and input UID (basing on the flag), then click " ResetReady " button and increase message in empty space below the red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard ,the following are commonly used:

The two optionals 0x02 : Disabled

0x22: when transfer CMD , please input 8 bits UID and there can be several cards in reading area.

0x42: Disabled

UID is made up with 8 of 2 bits hexadecimal number.

4.5.4.9 Write AFI

Firstly please select flag and input UID (basing on the flag) , then click “ WriteAFI” button and increase message in empty space below the red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard, the following are commonly used；

The two optionals 0x02 : Disabled

0x22: Disabled .

0x42: Selectable.

UID is made up with 8 of 2 bits hexadecimal number.

4.5.4.10 Write DSFID

Firstly please select flag and input UID (basing on flag), then click “ WriteDSFID “ button and increase message in empty space below the red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard , the following are the commonly used:

The two optionals 0x02 : Disabled

0x22: Disabled.

0x42: Selectabled

UID is made up with 8 of 2 bits hexadecimal number .

4.5.4.11 Lock AFI

Firstly please select flag and input UID(basing on flag), then click “ Lock AFI “button and increase message in empty space below the red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard, the following are commonly used:

The two optionals 0x02: Disabled.

0x22: Disabled.

0x42: Selectable.

4.5.4.12 Lock DSFID

Firstly please select flag and input UID (basing on flag) , then click “ Lock DSFID “ button and increase message in empty space below the red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard, the following are commonly used :

The two optionals 0x02：Disabled.

0x22: Disabled.

0x42: Selectable .

4.5.4.13 Lock Operating with the sector of card

Firstly please select flag and input UID (basing on flag), then click “ Lock “ button and increase message in empty space below the red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard , the following are commonly used:

The two optionals 0x02 : Disabled.

0x22: Disabled.

0x42: Selectable.

4.5.4.14 Transfer CMD

Firstly please select flag and page number , input UID (basing on flag) , then click “TransferCMD “ button and increase message in empty space below the red circle as Picture Night.

There are many flag parameters and the details please refer to ISO/IEC 15693 Standard, the following are commonly used:

The two optionals 0x02 : Disabled.

0x22: when transfer CMD, please must input 8 bits of UID and there can be several cards in reading area.

0x42: Disabled.

4.5.4.15 Empty Message Box

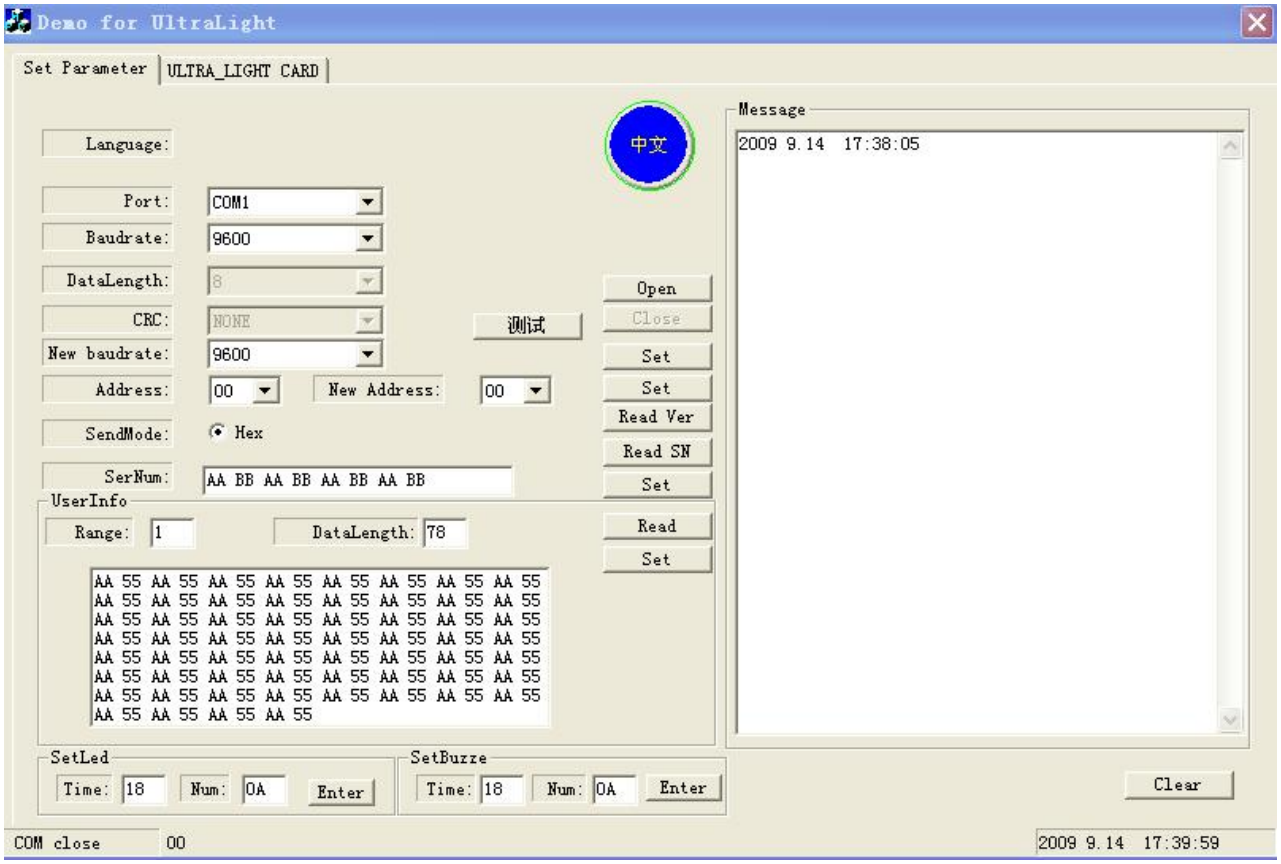
Click “ Empty message “ and leaves one line of time or blank in red circle as Picture Night.

4.6 Module Six Property page of “ULTRA LIGHT Card”

4.6.1 Function Description

This module mainly contains the information exchange between the reader and the ULTRA LIGHT card of external meet ISO/IEC 14443 A Standard, and it takes PHILIPS’s ULTRA LIGHT Card as the test card. The detail functions please refer to “4.6.3 operating method”.

4.6.2 User Interface



Picture 13 ULTRA LIGHT Card Interface

4.6.3 Operating method

4.6.3.1 Find card

Click “ Find card “ button and increase message in empty space below the red circle as Picture Night.

4.6.3.2 Hibernate

Click “ Hibernate “ button and increase message in empty space below the red circle as Picture Night.

4.6.3.3 Obtain serial number

Click “ Obtain serial number “and increase message in empty space below the red circle as Picture Night.

4.6.3.4 Arouse

Click “ Arouse “ button and increase the message in empty space below the red circle as Picture Night.

4.6.3.5 Read data

Firstly please select page number, then click “ Read data “ button and increase message in empty space below the red circle as Picture Night.

4.6.3.6 Write data

Firstly please select page number and input the contents you want to write to (the contents should be made up with 4 of 2 bits hexadecimal number), then click “ Read data “ button and increase message in empty space below the red circle as Picture Night.

4.6.3.7 Clear Message Box

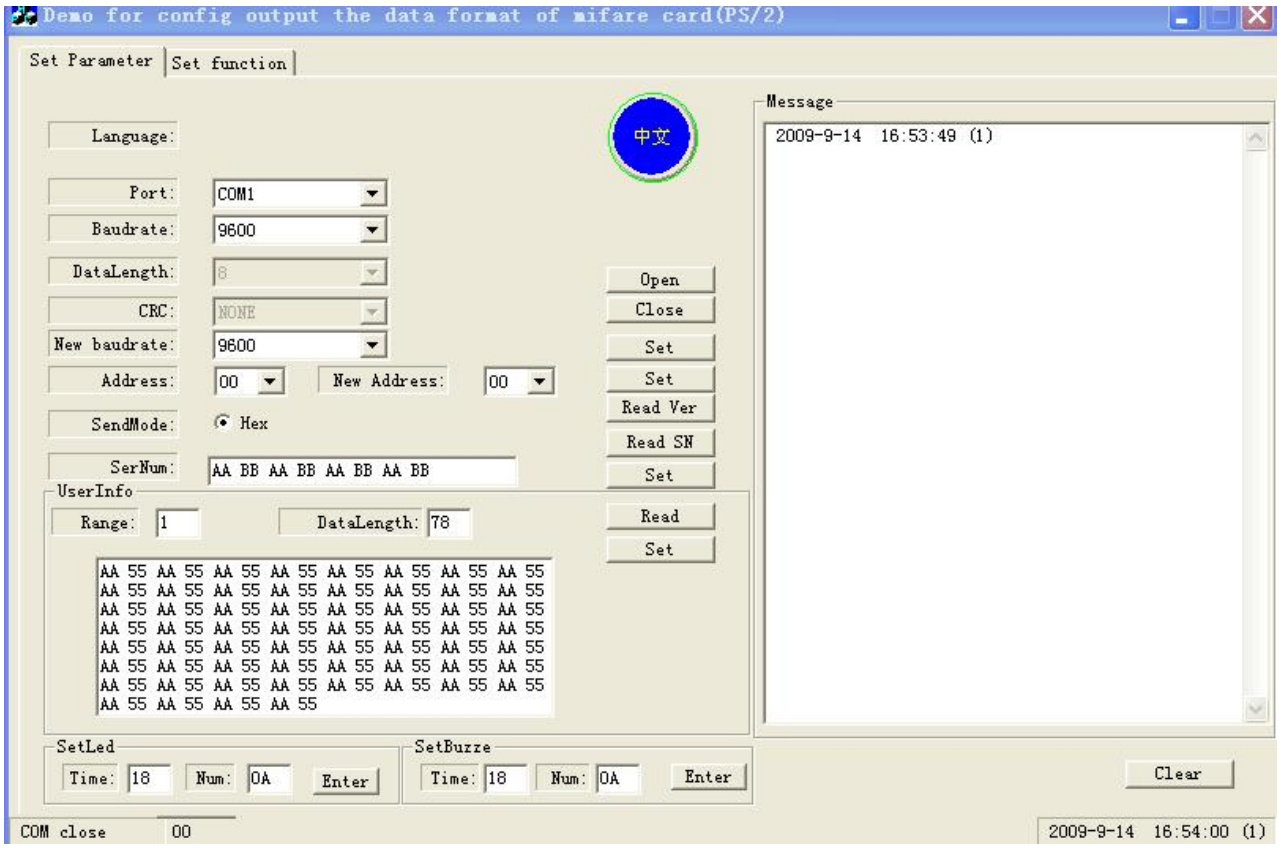
Click “ Clear “ button and increase message in empty space below the red circle as Picture Night.

4.7 Module Seven Property page of “output of ps2 interface”

4.7.1 Function Description

This module mainly contains the information exchange between the reader and Type A Card with SP/2 Interface that externally meet of ISO/IEC 14443 A Standard, and it takes Philips’s Mifare one S50 card which made of Mifare one S50-04 microchip, as test card. The detail functions please refer to “4.7.3 operating method”.

4.7.2 User Interface



Picture 14 Read card Interface of PS/2 Interface

4.7.3 Operating method

4.7.3.1 Read data of the card

The operating method please refer to “4.3.3.6 Read data of card “

4.7.3.2 Write data into the card

Please refer to “ 4.3.3.7 Write data into the card”

4.7.3.3 Set the output format of slot card

Firstly please the value of data 0,data 1 and data 2. then click “ Set “ button and increase message in empty space below the red circle as Picture Night . And when the mouse point at one place, there will be come out the relevant message about the according parameter.

4.7.3.4 Clear Message Box

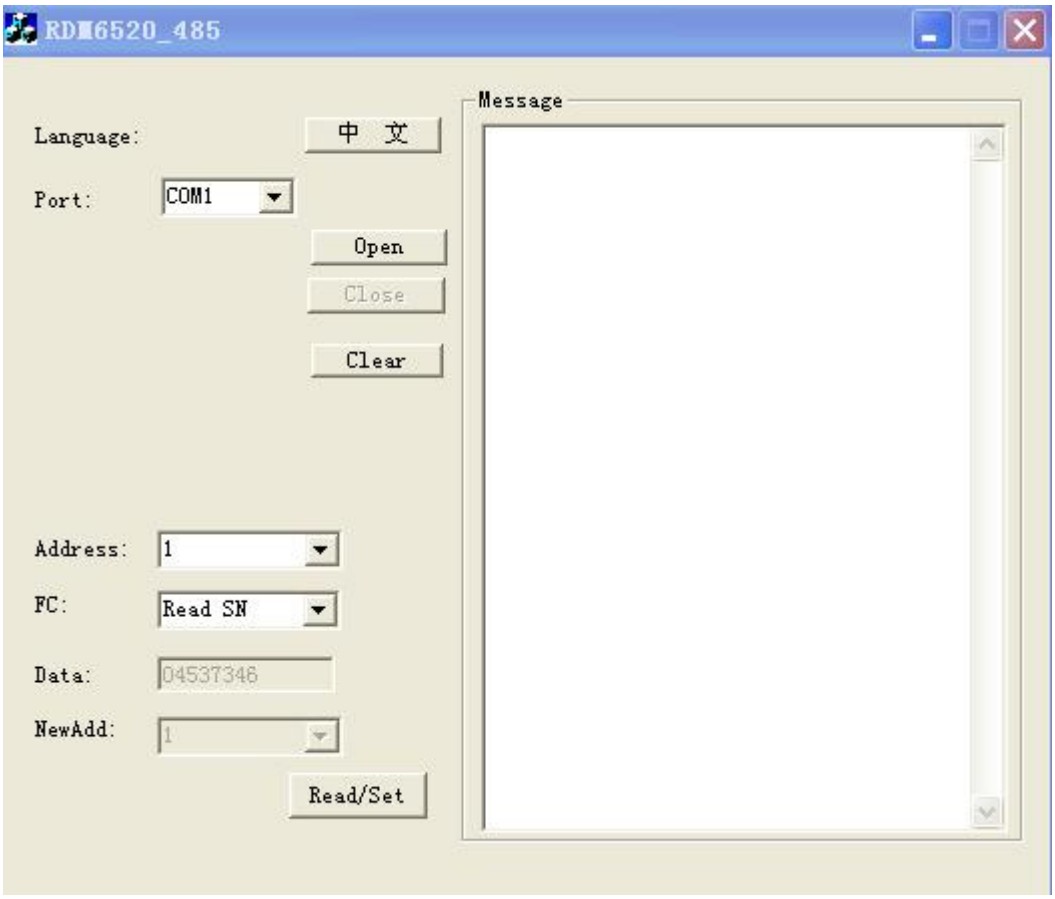
Click “ Clear “ and increase message in empty space below the red circle as Picture Night.

4.8 Module Eight RS-485 private for access control

4.8.1 Function Description

This module mainly contains the information exchange between the reader and the ID Card that externally meet 125khz through RS-485 Interface , and it takes PHILIPS 125K ID Card as test card , the detail functions please refer to “4.8.3 Operating method”.

4.8.2 User Interface



Picture 15 Read card interface of RS-485 Interface

4.8.3 Operating method

4.8.3.1 Open port

Firstly please select port number , then click “ Set “ button and increase message in empty space below the red circle. When the mouse points at one place, there will be come out the relevant message about the according parameter. Then write data into the card.

4.8.3.2 Operating with Reader

Firstly please select the device’s address, function code, data(basing on function whether to include in), and the new device’s address(basing on function whether to include in), then click “ Set “ button

and increase message in empty space below the red circle. When the mouse points at one place, there will be come out relevant message about the according parameter.

4.8.3.3 Clear Message Box

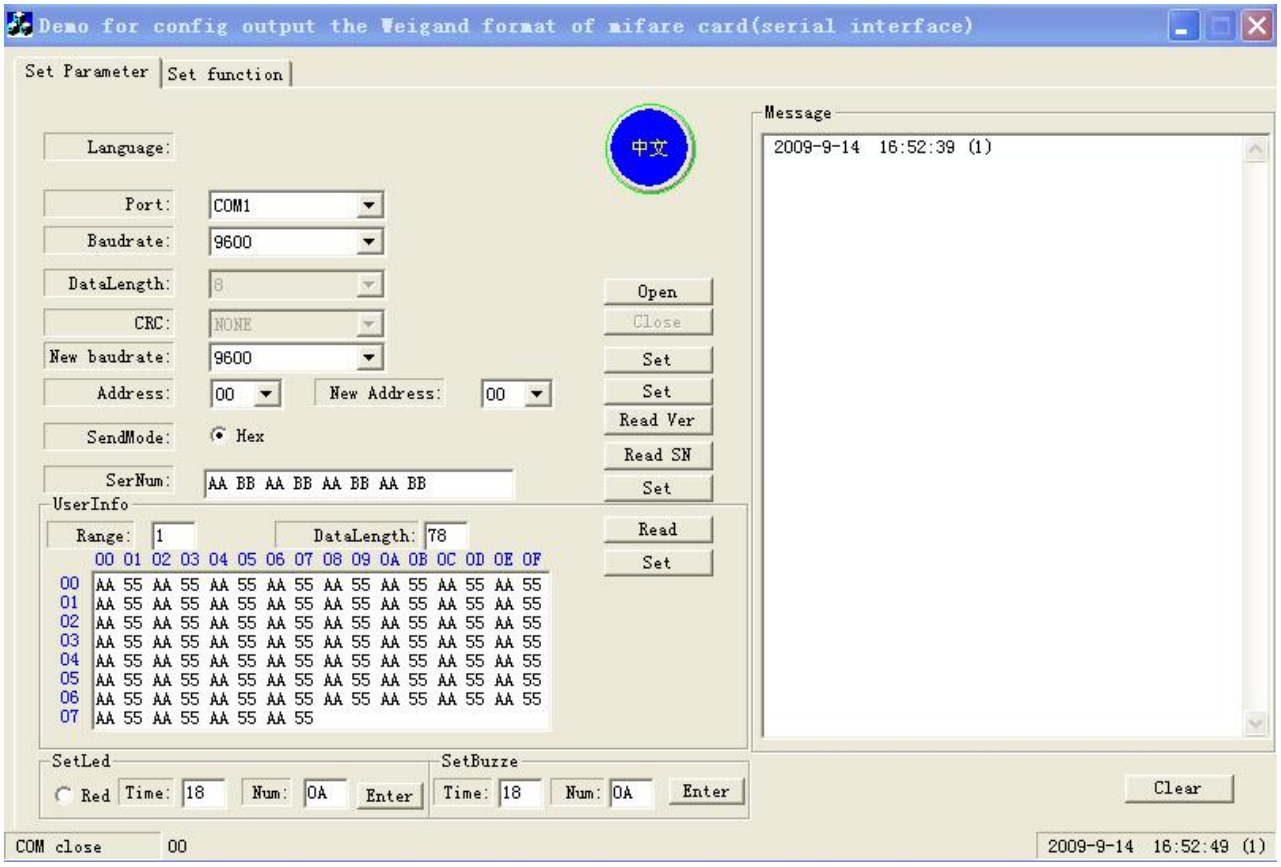
Click “ Clear “ button and increase message in empty space below the red circle as Picture Night.

4.8 Module Nine Property page of output data of Weigand format

4.9.1 Function Description

This module mainly contains the information exchange through Weigand format between the reader and the Type A Card that externally meet ISO/IEC 14443 Standard, and it takes Philips Mifare one S50 Card (made of Mifare oneS50-04 microchip) as test card. The detail functions please refer to “ 4.9.3 Operating method “.

4.9.2 User Interface



Picture 15 Operating interface of Weigand format output data

4.9.3 Operating Method

4.9.3.1 Read data of the card

Please refer to “ 4.3.3.6 Read data of the card”

4.9.3.2 Write data into the card

Please refer to “ 4.3.3.7 Write data into the card”.

4.9.3.3 Set the output format of data

Firstly please select the value of data0, data1 and data2, then click “ Set “ button and increase message in empty space below the red circle as Picture Night. And when the mouse points at one place, there will be come out relevant message about according parameter.

4.9.3.4 Clear Message Box

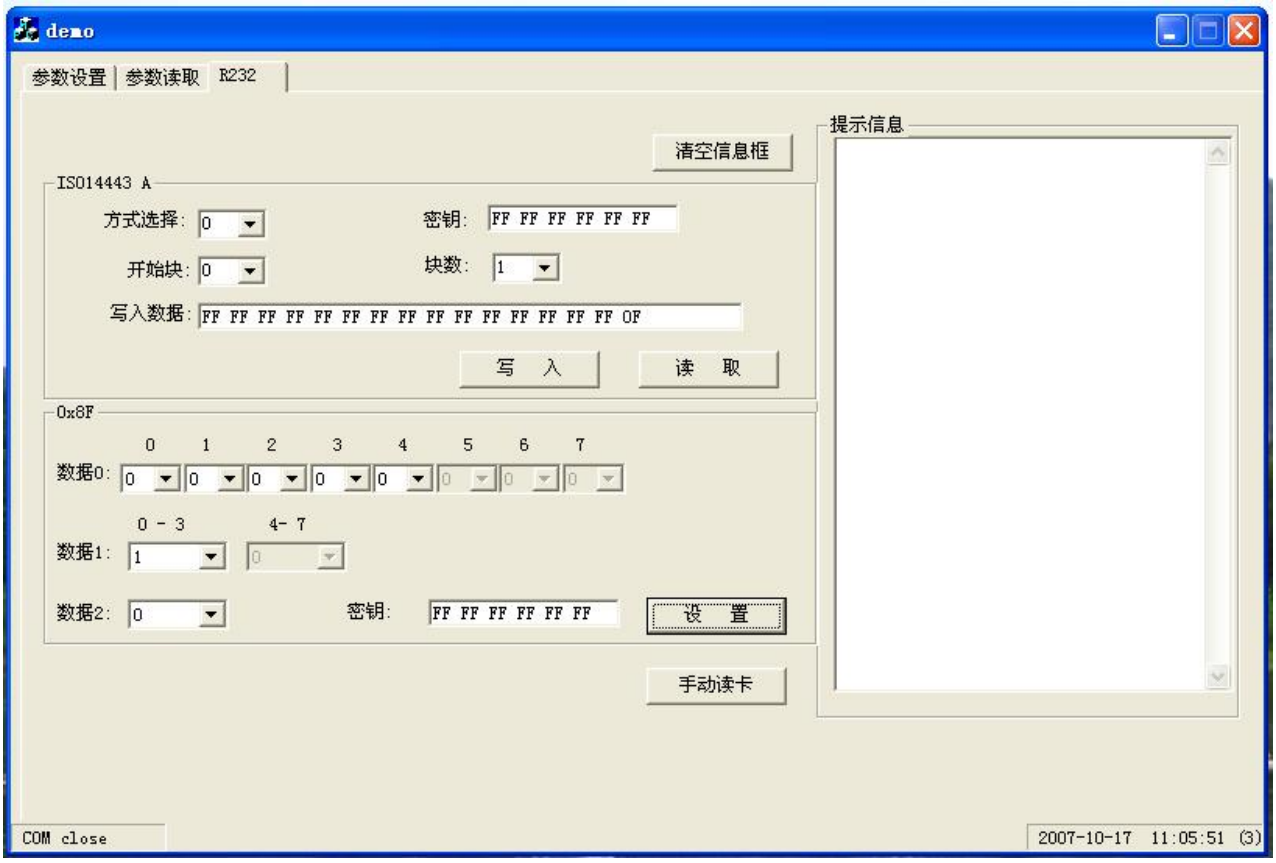
Click “ clear “ button and increase message in empty space below the red circle as Picture Night.

4.10 Module Ten Property page of “ Output of RS-232 interface

4.10.1 Function Description

This module mainly contains the information exchange through the RS-232 interface between the reader and Type A Card that externally meet ISO/IEC 14443 Type A Standard, and it takes Philips’s Mifare one S50 Card (made of Mifare oneS50-04 microchip) as the test card. The detail functions please refer to “4.10.3 Operating Method “.

4.10.2 User Interface



Picture 16 Operating interface of RS-232 interface output

4.10.3 Operating Method

4.10.3.1 Read data of the card

Please refer to “4.3.3.6 Read data of the card”

4.10.3.2 Write data into the card

Please refer to “ 4.3.3.7 Write data into the card “

4.10.3.3 Set the output format of data

Firstly please select the value of data0, data1, data2 , then click “Set “ button and increase message in empty space below the red circle as Picture Night. And when the mouse points at one place, there will be come out the relevant message about according parameters.

4.10.3.4 Read card by hand

When the bit4 of data0 is 0, please read the data of the reader with this button.

NOTE: After the card communicate with the read , both of the two led will turn red, that means the needed data in the reader can be read manually.

4.10.3.5 Clear Message Box

Click “ clear “ button and increase message in empty space below the red circle as Picture Night.

5 Appendix

5.1 FAQ

1. The led of the reader don’t work

Cause of problem: 1) The cables are not connected well.

2) The led is broken (but it rarely happens)

Solutions : Please change the relevant hardware.

2 Open port successfully but fail to operate with other command.

Cause of problem: 1) The cables are not connected well.

2) The opening port is not the port of connecting with the reader.

3) The reader’s baud rate is not in accord with the PC COM port.

Solutions: Cause 1: Refer to reason 1.

Cause 2, 3 : Close the port then reopen the port with the connecting port of the device and the current baud rate of the reader.

3.After set the new format for Module Ten, the result of reading still be old format.

Cause of problem: The application of new format will be work after restarting.

Solutions: Cut off the power once by hand , that means remove the cables and then plug into again.

5.2 Meaning of ISO/IEC 15693 Flag value

5.2.1 The provision of mark 1 to 4 of the flag

Chart 1 Provision of mark 1 to 4 of Flag

Digital(bit)	mark name	Value	Description
B1	Subcarrier	0	VICC should use single subcarrier frequency
		1	VICC should use two subcarrier
B2	Data rate	0	Using low data rate
		1	Using high data rate
B3	Content	0	Mark of 5 to 8 according to Table 2
		1	Mark of 5 to 8 according to Table 3
B4	Protocol Extension	0	None-protocol format extension
		1	Protocol format has expanded and reserverd for future use

NOTE 1: The subcarrier should refer to the VICC-to-VCD communication of the provision of ISO/IEC 15693-2.

NOTE 2: The data rate should refer to the VICC-to-VCD communication of the provision of ISO/IEC 15693-2.

5.2.2 The provision of mark 5 to 8 of Flag

Chart 2 The ask for provision of mark 5 to 8 when the content is not set.

Digital（Bit）	Mark name	Value	description
b5	Select	0	According to addressing set, the request will execute by any VICC
		1	The request only can be executed by the selectable state of VICC, the addressing should be set to 0 and the UID domain should not include in the request.
B6	Addressing	0	The request is not to addressing and not include UID domain, then it can be executed by any of VICC.
		1	The request includes addressing and UID domain, then it only can be executed by the provision UID in request and matching with its own UID.
B7	Option	0	The meaning should be described by the command, if

			there is no, it should be set to 0.
		1	The meaning should be described by the command.
B8	RFU	0	

Chart 2 The ask for provision of mark 5 to 8 when the content is set.

digital（Bit）	Mark name	Value	Description
b5	AFI	0	Not appear AFI domain
		1	Appear AFI
B6	Nb_slots	0	16 slots
		1	1 slot
B7	Option	0	The meaning should be described by the command, if there is no, it should be set to 0.
		1	The meaning should be described by the command
B8	RFU	0	

5.3 ISO/IEC 15693 AFI CODE

Chart 3 AFI CODE

AFI High nibble I	AFI low nibble	Response mode of VICCs	Example/comment
'0'	'0'	All clans and sub-clan	No proselective available
X	'0'	All clans and sub-clan	Proselective available
X	Y	The Y sub-clan of X clan	
'0'	Y	Only Y sub-clan option	
'1'	'0', Y	Transport	Bulk transport, transit, aviation
'2'	'0', Y	Financial	IEP, Bank, retail
'3'	'0', Y	Mark	Access control
'4'	'0', Y	Telecommunication	Public phone，GSM
'5'	'0', Y	Medical treatment	
'6'	'0', Y	Muitimedia	ISP
'7'	'0', Y	Game	
'8'	'0', Y	Data storage	Portable files
'9'	'0', Y	Clause management	
'A'	'0', Y	Express package	
'B'	'0', Y	Postal service	
'C'	'0', Y	Air service	
'D'	'0', Y	RFU	
'E'	'0', Y	RFU	

‘F’	'0', Y	RFU	

NOTE： X = '1' to 'F'，Y = '1' to 'F'。