


UHFReader18 Demo Software User's Guide v2.6

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1. Parameter interface operation

1.1 Open COM Port

Before open com port, please make controller properly connected with the host using the communication cable provided and then turn on the power. then select  Com .


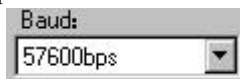
(1) Auto Open Comport:

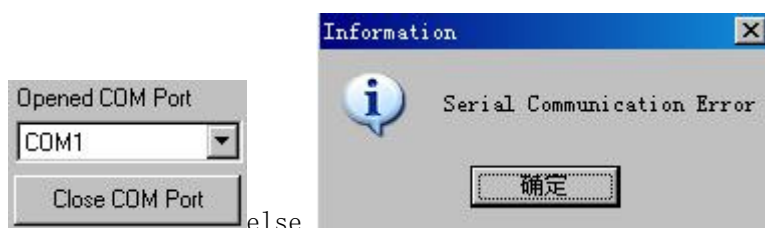
Value 255(0xFF) is broadcasting address. All controllers will respond the order with a broadcasting address.

Other value (0x00~0xFE) is controller address. Only will the controller conforming to the address respond the operation.



COM Port:
 Reader Address:

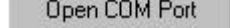
Click , If reader connect the computer's COM1 ~ COM9, we can see the port display in the place. the demonstration software to  by connecting the port and written communication, the connection to the port to have a beginning, such as :

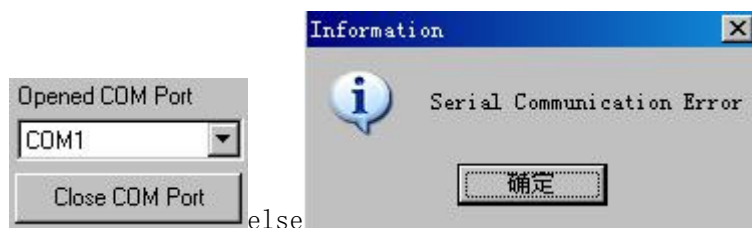


(2) Open Designated Comport:



COM Port:
 Reader Address:

Click , the Baud will Auto Select From 115200bps, 57600bps, 38400bps, 19200bps, 9600bps, if success



1.2 Open Net Port

Select  Com 

(1) Search device by **TCPIP Config** page

NO.	MAC	IP	User/Device
1	0.34.111.4.15.185	192.168.1.100	RR/RFID

(2) Input device TCPIP communication port

Port: and IP:

(3) click **Open Net** open device and **Close Net** close device

1.3 Parameter Setting:

(1) **Address(HEX):** the new reader address to set. This address can't be 0xFF. If set 0xFF, reader will return error information.


(2) **Power:** set and save power configuration.

(3) **FreqBaud** select the reader's band, different band, the frequency of different.

(4) **Dminxfre:** **Dmaxfre:** Set reader working Min Frequency and Max Frequency. In different places, the radio requires the rule to be different. Users can follow the local situation and choose to read more sensitive frequency range of the card. In single frequency point operation, only need to set two frequencies to the same value. In frequency hopping operation, only need to set two frequencies to the different value.

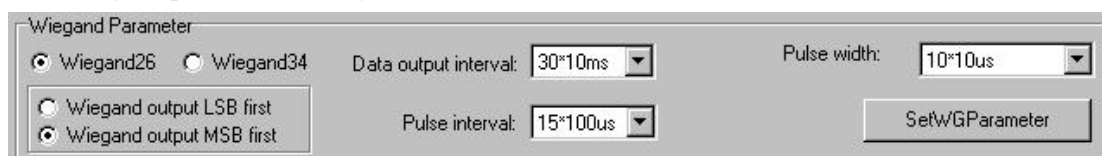
(5) **Baud:** demo software start run, default use the baud rate 57600 to open COM port, reader power on, reader baud rate default is 57600. After change the baud rate, reader use the new baud rate until power off. Close port and open port, the baud rate no change. The demo software will use the new baud rate, until

close the demo software.

- (6)  set the inventory scan max response time of reader. If demo software sends the inventory order, it will wait 30*10ms for reader response and exits.


1.4 Work mode parameter setting

(1) Wiegand parameter Setting

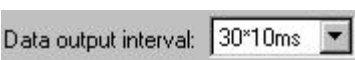



The Wiegand Parameter dialog box contains the following settings:


- ☒ Wiegand26 ☐ Wiegand34
- Data output interval:
- Pulse width:
- ☐ Wiegand output LSB first
- ☒ Wiegand output MSB first
- Pulse interval:
- SetWGParameter button

- <1>  Weigand 26、34 select.

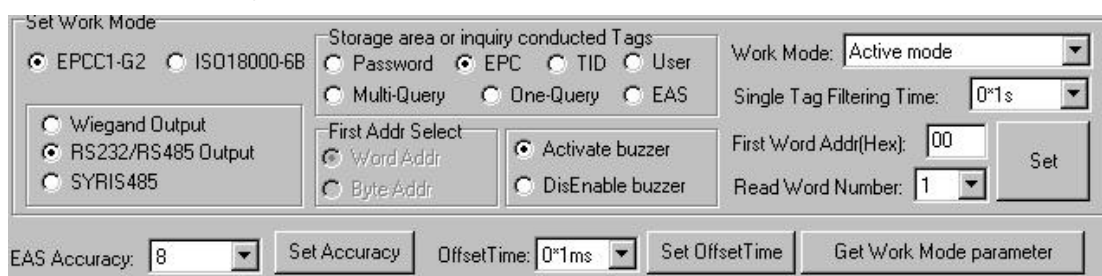
- <2>  Weigand output format select.

- <3>  Settings wergen the output of data at regular intervals, the two sets of data gaps between wergen at least 30 - 10ms.

- <4>  Set weigand Pulse Width , this pulse width is the 10*10us.

- <5>  Set a pulse. the interval between pulses for 15 - 100us, with the interval between pulses weigand agreement. the impulse to burst the interval between pulses.



(2) Work mode setting:




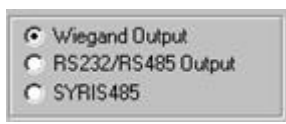
The Set Work Mode dialog box contains the following settings:

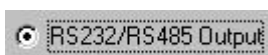
- ☒ EPCC1-G2 ☐ ISO18000-6B
- Storage area or inquiry conducted Tags:
 - ☐ Password ☒ EPC ☐ TID ☐ User
 - ☐ Multi-Query ☐ One-Query ☐ EAS
- Work Mode:
- Single Tag Filtering Time:
- ☐ Wiegand Output
- ☒ RS232/RS485 Output
- ☐ SYRIS485
- First Addr Select:
 - ☒ Word Addr
 - ☐ Byte Addr
- ☒ Activate buzzer
- ☐ DisEnable buzzer
- First Word Addr(Hex):
- Read Word Number:
- Set button
- EAS Accuracy:
- Set Accuracy button
- OffsetTime:
- Set OffsetTime button
- Get Work Mode parameter button

Response to the mode of argument is invalid, the initiative in this mode is valid.

- <1>  Set Reader's support of the protocol. Select 

Reader is only support ISO18000-6C ; Select  Reader is only support ISO18000-6B.

- <2>  Set output mode of active work mode.when select

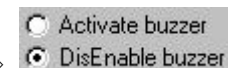


putout Reader data with RS232/RS485. click

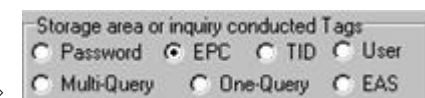


show message as

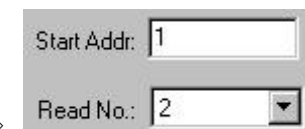
```
07 00 EE 00 0D B7 25 7F
07 00 EE 00 0D B7 25 7F
07 00 EE 00 0D B7 25 7F
07 00 EE 00 0D B7 25 7F
07 00 EE 00 0D B7 25 7F
```



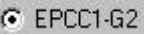
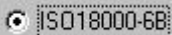
- <3> Set up to the reader when the data is there a buzzer prompt sound.



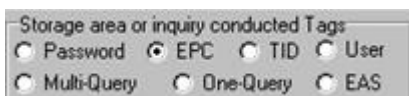
- <4> Set reader of the tag to read some of the data or checks for the tag of EPC. if the data with a password protected areas then can not read.



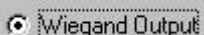
- <5> Set the start address and number of to be read,a word is 2 bytes.

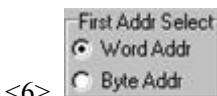
Starting address (16 binary):when select , that Reader support ISO18000-6C protocol, 0 read from the first word(The appropriate storage first16 bit), 1 read from second word, four times; when select , that Reader support ISO18000-6B protocol, 0 read from the first byte(The appropriate storage first 8 bit), 1 read from second byte, four times. if“Start Addr+Read NO.” Greater than the corresponding storage area to read, read and write the address of the data will not read data.

Read NO.(10 binary) : when select  、  、

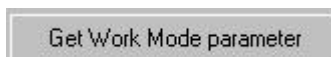


, Reader inventory tag's EPC , And the starting





address and read is not; when select , Read data number is 2, can not setting, for this time,if“Start Addr+2” Greater than the corresponding storage area to read, read and write the address of the data will not read data.



- <6> Set the start address



- (3) Get work mode parameter: click this button, can get Reader's waigand and work mode parameter.

- (4)  Set EAS accuracy. Default is 8.
- (5)  Set Syris485 offset time. Default is 0.
- (6)  Used to get or set reader's Tigger time.
- (7)  ,set two relay release or active.first select then click set button.

2. The Necessary Knowledge

2.1 EPCC1G2 tag memory

Tag memory divided into four storage areas, each storage area can be made up of one or more memory words. The four storage areas:

EPC areas (EPC): Store the area of EPC number, this module stipulates it can store 15 word EPC number. Can read and can write.

TID areas (TID): Store ID number established by the tag production firm. There are 4 words and 8 words two kinds of ID numbers at present. Can read and not can write.

User areas (User): This area of different manufacturers is different. There is no user area in G2 tag of Inpinj Company. There are 28 words in Philips Company. Can read and can write.

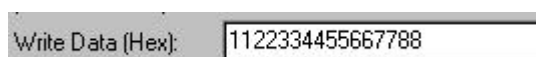
Password areas (Password): The first two words is kill password, the last two words is access password. Can read and can write.

Can write protect in four storage areas. It means this area is never writeable or not writeable under the non-safe state; only password area can set unreadable.

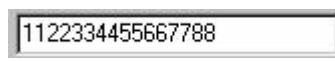
2.2 18000-6B tag

6B tag has a memory space, the minimum 8 bytes (byte 0- 7) is UID of the tag, and can't be rewritten. Following byte all can be rewritten, can be locked too, but once locking, can't rewrite again, can't unblock either.

2.3 Data display (tag ID, passwords, memory data is display in 16 hexadecimal)



Display in Hex, then 11 is first byte, 22 is second byte, and 1122 is first word.

 Total 8 bytes, in other words, total 4 words.

3. EPCC1-G2 Test operation (COM IS OPEN)

3.1 Query Tag (The operation needing to choose the tag all need to query tag first)

- (1) Read Interval: 50ms Every 50ms issued a command checks.

(2)



can see

No.	ID	EPC Length	Times
1	AE534012580A04E0	08	14

- (3) Check ☒ TID, input query TID's parameter,

Query TID Parameter

StartAddr: 00 Len: 03

can see

No.	ID	EPC Length	Times
1	E20034120130	06	19

3.2 Read Data, Write Data, Block Erase

EPC Mask Enabled

☐ Enabled Maskadr: 00 MaskLen: 00

Read Data / Write Data / Block Erase

☐ Calculation PC: 0800

☐ Password ☒ EPC ☐ TID ☐ User

Address of Tag Data(Word/Hex): 00

Length of Data(Read/Block Erase: 4

Password(Read/Block Erase) (0-120/Word/D): 00000000

Write Data (Hex): 0000

Read Write Block Write Block Erase Clear

213C2000AE534012
213C2000AE534012
213C2000AE534012
213C2000AE534012
213C2000AE534012
213C2000AE534012
213C2000AE534012
213C2000AE534012
213C2000AE534012
213C2000AE534012

- (1) Read data operation

<1> Choose tag AE534012580A04E0

<2> Choose memory ☐ Password ☐ EPC ☐ TID ☒ User

Address of Tag Data(Word/Hex): 00

Length of Data(Read/Block Erase: 4

Password(Read/Block Erase) (0-120/Word/D): 00000000

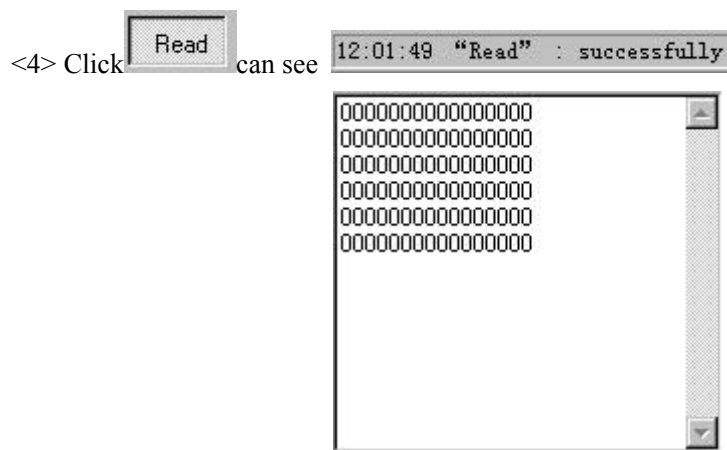
<3> Write

Start address: 0x00 stand in start to read data from first word in the designated

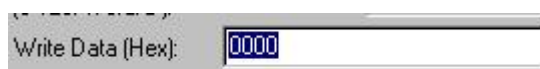
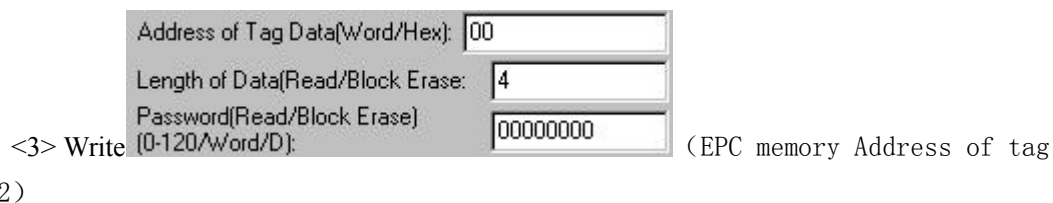
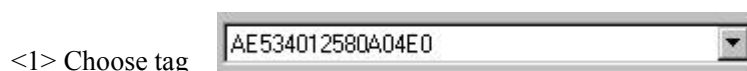
storage area, 0x01 stand in start to read data from second word in the designated storage area, and so on.

Read the length: Number of the word to be read. It read 120 words at most. Can not set 0 or 120, otherwise, return the parameter error information.

Access password: From left to right it is the former high-word, low word in the access password. If operation don't need access password, it can be the arbitrary value, but can't lack.



(2) Write data operation

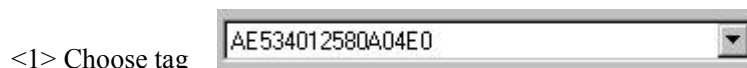


Start address: 0x00, the first word of data (from left) is written in address 0x00 of the designated storage area, and so on.



17:35:06 "Write" Command Response=0x00 (completely write Data successfully)

(3) Block Erase Operation (write 0 to the designated data)



Start address: 0x00 stand in start to erase data from first word in the designated storage area, 0x01 stand in start to erase data from second word in the designated storage area, and so on.

The difference from write operation: Needn't fill in the data.

<4> Click  can see

14:51:32 "Block Erase" Command Response=0x00 (Block Erase successfully)

(4) Write block operation

<1> Choose tag

AE534012580A04E0

<2> Choose memory

☐ Password ☐ EPC ☐ TID ☒ User

<3> Write

Address of Tag Data(Word/Hex): 00
Length of Data(Read/Block Erase: 4
Password(Read/Block Erase)
(0-120/Word/D): 00000000

(EPC memory Address of tag

is 2)

Write Data (Hex): 0000

Start address: 0x00, the first word of data (from left) is written in address 0x00 of the designated storage area, and so on.

<4> Click  can see

11:54:06 "WriteBlock" Command Response=0x00 (completely write Block successfully)

(4) EPC Mask Enable

EPC Mask Enabled
☒ Enabled Maskadr: 00 MaskLen: 02

<1>

Maskadr : The mask the first byte address.

MaskLen: The mask of bytes length.

(5) Write EPC


<1>check ☒ Calculation PC: 0800

<2>select

☐ Password ☒ EPC ☐ TID ☐ User

<3>Input new EPC number

Write Data (Hex): 11112222

<4>click , if succeeded, can see

17:35:06 "Write" Command Response=0x00 (completely write Data successfully)

3.3 Revise the password

- (1) Choose tag

- (2) Choose memory

- (3) Write access password

Access password: From left to right it is the former high-word, low word in the access password. If operation don't need access password, it can be the arbitrary value, but can't lack.

- (4) Revise the access password 12345678: Write

- (5) Revise the kill password 12345678: Write

- (6) If succeed, we can see

```
14:50:44"Write"Command Response=0x00 (completely write Data successfully)
```


3.4 Write EPC (Needn't query tag)

- (1) Write access password (If EPC area of the tag has not set password protection, we can write 8 data arbitrarily)

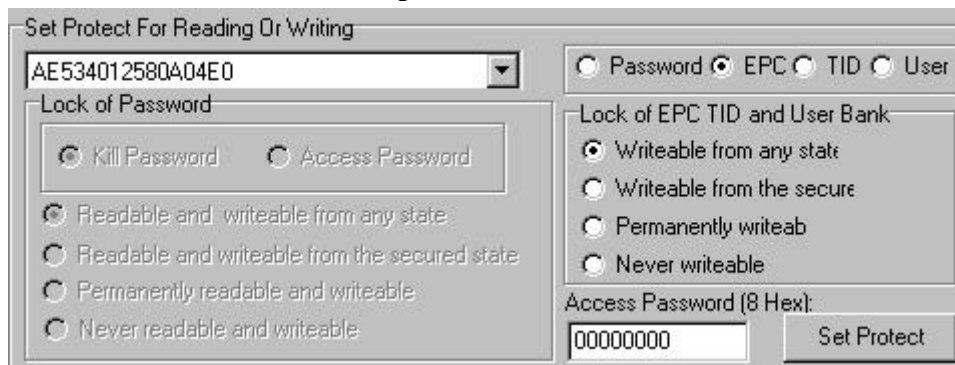
- (2) Write EPC.

- (3) Click . (Random write one tag in the effective range of antenna)

When there are many or EPC pieces of tag in the effective range of antenna, and the access password of one tag is the same as you entered, or EPC area of tag set no password protection,

click  at a time, random write EPC number of one tag in the effective range of antenna.

3.5 Set the state of read and write protection



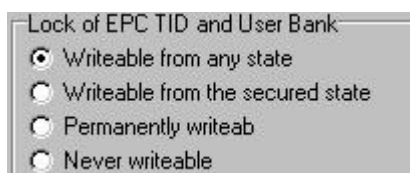
- (1) Choose tag



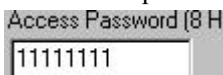
- (2) Choose memory



- (3) Choose protection type

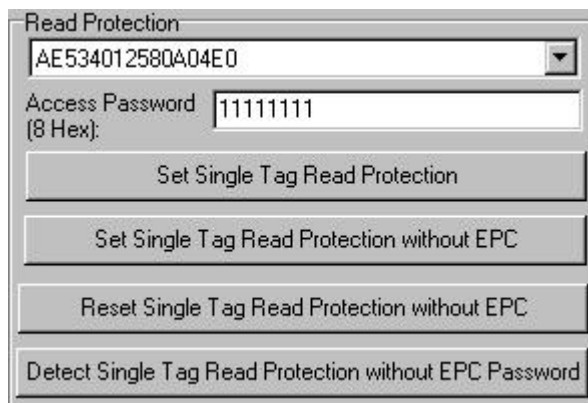


- (4) Write access password:



Any storage area in no password protection status still must write the correct access password.(password can not be zero).

3.6 Read Protection



- (1) Set Single Tag Read Protection



According to EPC number of the tag, setting read protection, make tag unable to be read and written by any order, even if query the tag, it is unable to get EPC number of the tag. Only NXP UCODE EPC G2X tags valid.

(2) Set Single Tag Read Protection without EPC



The difference from : When there are several tag in the effective range of antenna, reader don't know the tag which the order operate.

If operate several tags, then the access password of the tag had better be the same. Only NXP UCODE EPC G2X tags valid.

(3) Reset Single Tag Read Protection without EPC



Use for reset the tag read protection.

Only put a tag in the effective range of antenna. Only NXP UCODE EPC G2X tags valid.

Comments: If tag does not support the read protection setting, it must be unprotected.

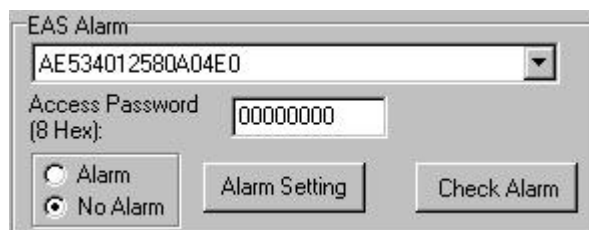
(4) Detect Single Tag Read Protection without EPC



Can't detect tag whether it support read protection order, can only detect single tag whether it is protected. If tag does not support the read protection setting, it must be unprotected.

Make sure that there is single tag in the effective range of antenna. Only NXP UCODE EPC G2X tags valid.

3.7 EAS Alarm



The 'EAS Alarm' dialog box contains a dropdown menu with the tag ID 'AE534012580A04E0'. Below it is a text field for 'Access Password (8 Hex):' containing '00000000'. At the bottom, there are two radio buttons: 'Alarm' (unselected) and 'No Alarm' (selected). To the right of the radio buttons are two buttons: 'Alarm Setting' and 'Check Alarm'.

(1) Alarm setting



Step 1: Choose tag. The dropdown menu shows 'AE534012580A04E0'.

Step 2: Write access password. The 'Access Password (8 Hex):' field shows '11111111'.

Step 3: Choose alarm. The 'No Alarm' radio button is selected.

Set or reset the EAS status bit of tag. Only NXP UCODE EPC G2X tags valid.

(2) Check alarm without EPC and access password



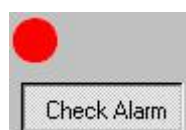
The 'Check Alarm' dialog box shows the 'Access Password (8 Hex):' field with '11111111'. It has two radio buttons: 'Alarm' (selected) and 'No Alarm' (unselected). To the right are 'Alarm Setting' and 'Check Alarm' buttons. A red indicator light is visible in the top right corner.

<1> Click check alarm

Check the EAS alarm of tag. Only NXP UCODE EPC G2X tags valid.

<2> EAS alarm:

```
15:04:37 "Check EAS Alarm"Command Response=0x00 (EAS alarm detected)
```



A red indicator light is shown above a button labeled 'Check Alarm'.

No EAS alarm:

```
15:07:29Command Response=0xFB (No Tag Operable)
```

3.8 Lock Block for User (Permanently Lock) (After the data locked, it can not be changed again)



The 'Lock Block for User (Permanently Lock)' dialog box contains a dropdown menu with 'AE534012580A04E0'. Below it is a dropdown menu for 'Address of Tag Data (Word):' with '0and1' selected. Further down is a text field for 'Access Password (8 Hex):' containing '00000000'. To the right of the password field is a 'Lock' button.

(1) Choose tag

(2) Write

Access password can not be the whole 0. Otherwise, the tag can not be locked, and the tag return response with parameter error.

- (3) Choose address of tag data (word). The user's area amounts to 14 word. (0- 13)

Lock permanently in 2 words. Therefore, the address of tag data is divided into 0 and 1, 2 and 3, 4 and 5, 6 and 7, 8 and 9, 10 and 11, 12 and 13. You can lock the data if you wish:

After the data get locked, it can be read only, can't be rewritten, and can't be erased too. Only NXP UCODE EPC G2X tags valid.

3.9 Kill Tag (Permanently Kill)

- (1) Choose tag

- (2) Write

Kill password can not be the whole 0. Otherwise, the tag can not be killed, and the tag return response with parameter error.

4. 18000-6B Test Interface Operation (After Open COM Port)

4.1 Query Tag

- (1) Read Interval: 50ms send a inventory command every 50ms.

- (2)

Only query the single tag. If many tags are in the effective range of antenna at the same time, it may be unable to query the tag.

No.	ID	Times
1	E0040000AEE77302	233

- (3)

<1> Unequal Condition:

Query Tags by Condition

☐ Equal Condition
 ☒ Unequal Condition

☐ Less than Condition
 ☐ Greater than

Address of Tag Data(0-223):

Condition(<=8 Hex Number):

Note:

The 8 bytes of 6B tag number write in the 0~7 which in the address of tag data (0- 233)

Figure, query condition begin to compare from the tag data address 0. The comparative content is 22.

Click

☐ Query by one
 ☒ Query by Condition

Query by Condition

See

No.	ID	Times
1	E0040000AEE77302	186
2	E0040000D4E77302	27

Figure, from the tag number we can see the addresses 0 of tag data: 00, 00, 11, 11.

Unequal condition 22, therefore, the four tags are read.

<2> Equal Condition:

Query Tags by Condition

☒ Equal Condition
 ☐ Unequal Condition

☐ Less than Condition
 ☐ Greater than

Address of Tag Data(0-223):

Condition(<=8 Hex Number):

Note:

The 8 bytes of 6B tag number write in the 0~7 which in the address of tag data (0- 233)

Figure, query condition begin to compare from the tag data address 0. The comparative content is 00.

Click

☐ Query by one
 ☒ Query by Condition

Query by Condition

See

List ID of Tags			
No.	ID	Times	
1	0022334455667788	69	
2	0022334455667789	69	

Figure, from the tag number we can see the addresses 0 of tag data: 00, 00.
Equal condition 00, therefore, the two tags are read.

<3> Greater than

Query Tags by Condition

☐ Equal Condition
 ☐ Unequal Condition

☐ Less than Condition
 ☒ Greater than

Address of Tag Data(0-233):

Condition(<=8 Hex Number):

Note:

The 8 bytes of 6B tag number write in the 0~7 which in the address of tag data (0- 233)

Figure, query condition begin to compare from the tag data address 0. The comparative content is 00.

Click

☐ Query by one
 ☒ Query by Condition

Query by Condition

See

List ID of Tags			
No.	ID	Times	
1	1122334455667788	8	
2	1122334455667789	8	

Figure, from the tag number we can see the addresses 0 of tag data: 11, 11.
Great than 00, therefore, the two tags are read.

4.2 Read and Write Data Block / Permanently Write Protect Block of Byte

(1)

(2) Read data:

Start address: 0x00 stand in start to read data from first word in the designated storage area, 0x01 stand in start to read data from second word in the designated storage area, and so on. Range is 8~223. Beyond this range, reader will return parameter error.

Read length: pointed to the number of bytes to read. Range is 1~32. If Start address + Read length greater than 224, or Read length greater than 32 or is zero, reader will return parameter error information. The high bytes of Read length write in the low address in tag.

(3) Write data:

Write data: Range is 1~32. If Start address + Write length greater than 224, or Write length greater than 32 or is zero, reader will return parameter error information. The high bytes of Read length write in the low address in tag.

(4) Permanently Write Protect: lock the designated byte.

(5) Check Protect: check whether the designated byte is locked.

(6) If succeed, we can see:

```
15:45:14"Read"successfully
```

```
15:44:36"Write"successfully
```

```
15:45:34"Lock"successfully
```

```
15:45:54 "Check Lock"Command Response=0x01(The Byte is locked)
```


5. Frequency Analysis Operation (After Open COM Port)

Frequency	Times	Percentage


(1)Click ,can see

902.60MHz (0)	30/30	100.00%
903.00MHz (1)	30/30	100.00%
903.40MHz (2)	30/30	100.00%
903.80MHz (3)	28/30	93.33%
904.20MHz (4)	30/30	100.00%
904.60MHz (5)	30/30	100.00%
905.00MHz (6)	30/30	100.00%
905.40MHz (7)	30/30	100.00%

The larger of the percentage ,the better of the results.


(2) Frequency hopping mode:   

This function can set an get hopping mode.

Click ,if succeeded ,can see

```
12:14:54 "Set" : successfully
```

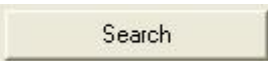

Click 

Can see the hopping mode at 

6. TCP/IP Config


(1)Click ,if find a device can see

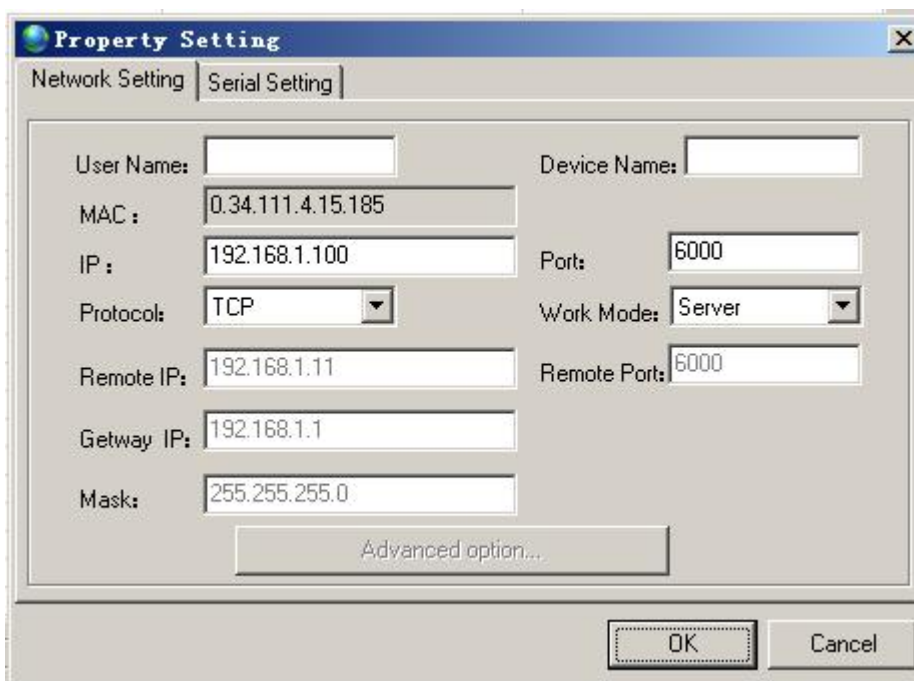
No.	MAC	IP	User/Device	
1	0.34.111.4.15.185	192.168.1.100		

(1) Click . If the device is correctly connected with the host, the device's IP address will show up in below text area. This IP address can be changed by clicking  button.

(2) Select device

No.	MAC	IP	User/Device
1	0.34.111.4.15.185	192.168.1.100	

Click  button to set the TCP/IP interface parameters. Set Network Setting tab as following:

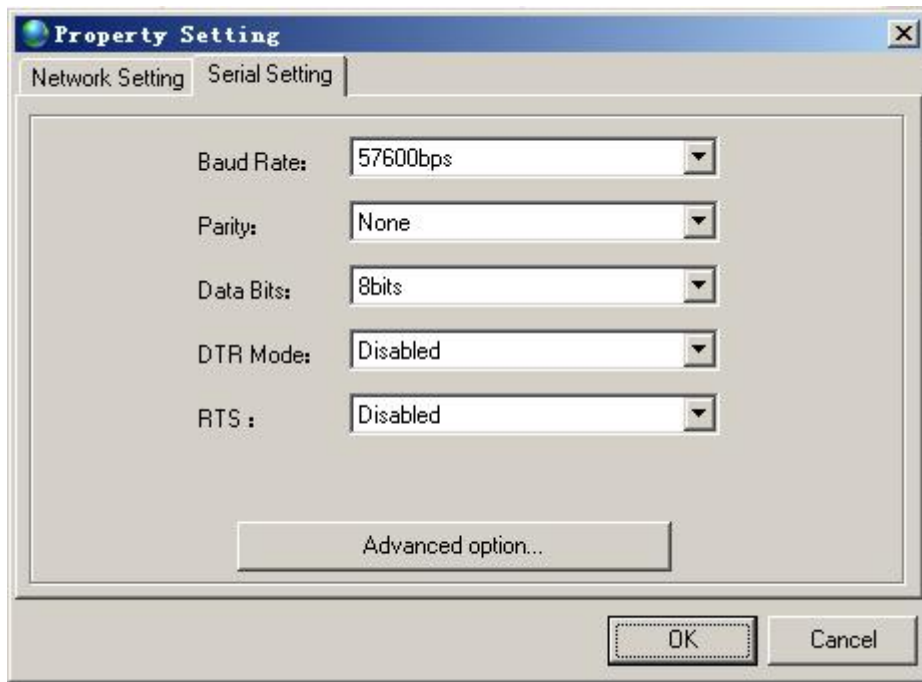


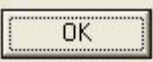
The image shows a 'Property Setting' dialog box with two tabs: 'Network Setting' and 'Serial Setting'. The 'Network Setting' tab is active. It contains the following fields and controls:

- User Name:
- Device Name:
- MAC:
- IP:
- Port:
- Protocol: (dropdown menu)
- Work Mode: (dropdown menu)
- Remote IP:
- Remote Port:
- Gateway IP:
- Mask:
- Advanced option...
- OK
- Cancel

Set Serial Settings tab as following:

(Remark: Baud rate and Parity should be set according to every device's serial communication parameters)



(3) Click  button to finish the parameter setting procedure.

The host application software uses socket communication method to exchange information with the device, there is no other configuration procedure needed. The device's built-in TCP/IP interface supports windows socket communication programming API. Application software should exchange information with the device using the protocol described in device's user's manual