LT-DS8116 User's Guide V2.3

LT-DS8116 is an industrial-grade, high-performance, 16-channel UHF RFID reading and writing equipment. It is designed with all-metal shell, and has excellent durability and heat dissipation performance. The product integrates a wealth of communication interfaces, including USB, RSS-232, Ethernet, wireless WIFI(optional) and so on.

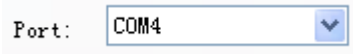
LT-DS8116 adopts carrier cancellation technology and a new anti-collision algorithm, the application of external watchdog and network heartbeat packet, the lightning protection and surge protection design of circuit, which makes its reading and writing performance excellent, stable and reliable, and has strong anti-interference ability. It can completely meet the needs of various environments.

1. Basic Parameter Setting

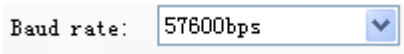
1.1 Connect Reader

<1> RS232 connection.

Select connect type

Select Port 

(According to the actually Select)

And baud rate 

(default) , click 

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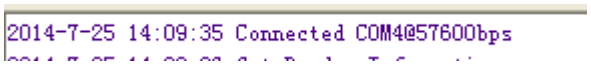
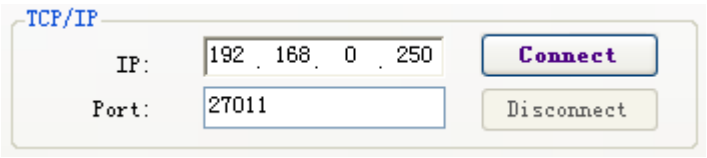
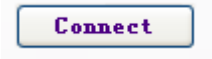
If success , can see 

<2>TCP/IP connection.

Select connect type

Input reader ip address and port:



Click 

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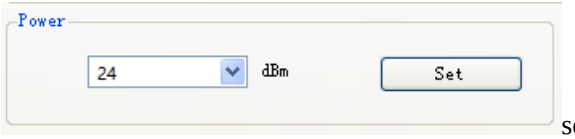
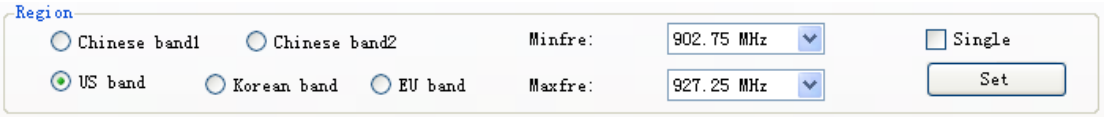
1.2 Parameter Setting:

（1） 

the new reader address to set. This address can't be 0xFF. If set 0xFF, reader will return error information.

（2） 

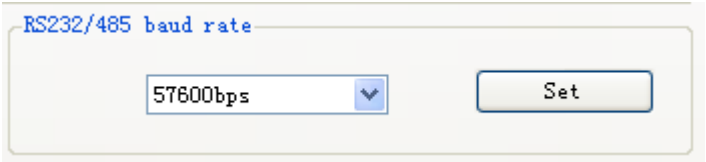
set and save power configuration.

（3）


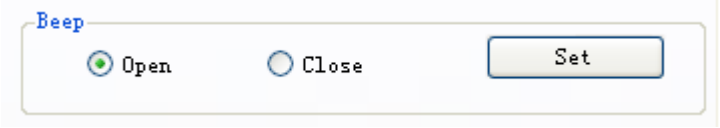
select the reader's band, different band, the frequency is different.

（4） 

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） 

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 beep open or close

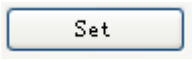
（7） 

，click 

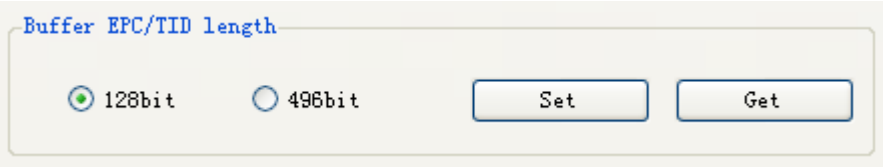
can get reader's serial number.

(8) 

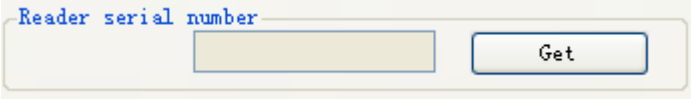
，select output port，click



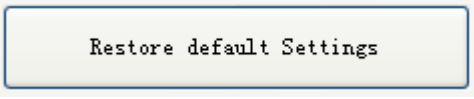
, Can install require notification output port.

（9） 

, this function is used to get or set EPC/TID length on buffer tag.

(10) 

,this function is used to get reader's serial number.

（11） 

, this function is used to restore default setting of reader.

（12） 

, this function is used to get reader's information.

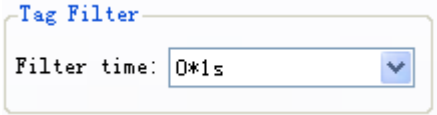
2. Work mode Setting

2.1 Real time inventory Setting:

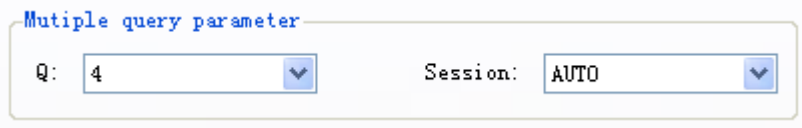
(1) 

select read tag type on real-time-query mode.

select read pulse time on real-time-query mode.

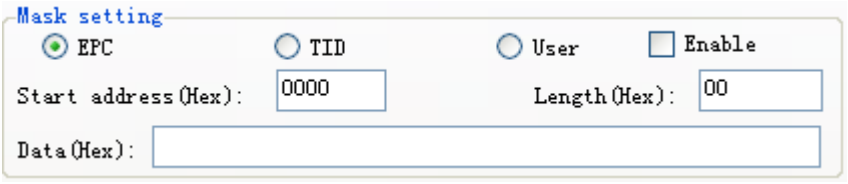


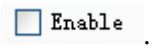
Select tag filter time, if select 0 is not filter.



Select Q and Session on real-time-query mode.

When Session is AUTO, only effective with EPC query.



set mask conditions on real-time-query mode, if you want it effective, you should check 

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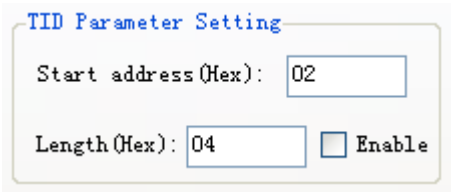
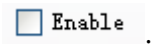


Set query TID parameter on real-time-query mode, if you want it effective, you should check 

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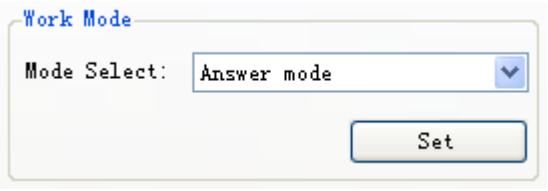
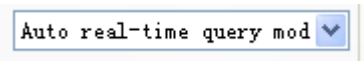
set parameter with you select condition, 

get reader parameter on real-time-query mode.

(2) 

Set reader work mode, if it set to 

, we can get data by page "AUTO Real time".

3. The Necessary Knowledge

3. 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.

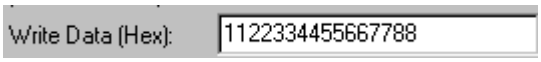
Can write protect in four storage areas. It means this area is never writeable or not writeable under the non-safe state; only password area can set unreadable.

3.2 18000-6B tag

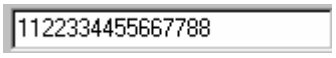
6B tag has a memory space, the minimum 8 bytes (byte 0- 7) is UID of the tag, and can't

be rewritten. Following byte all can be rewritten, can be locked too, but once locking, can't rewrite again, can't unblock either.

3.3 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.

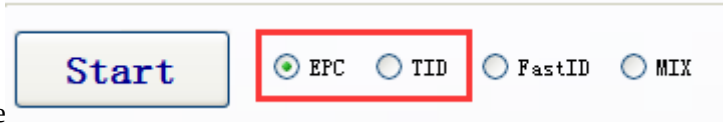


Total 8 bytes, in other words, total 4 words.

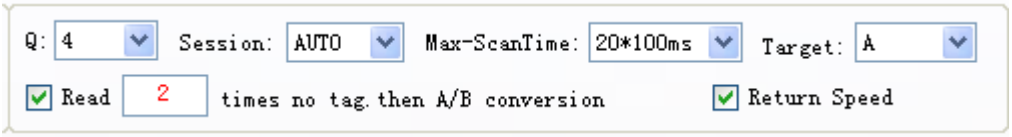
4. EPCC1-G2 Test

4.1 Query Tag EPC

（1）Select EPC or TID to read,

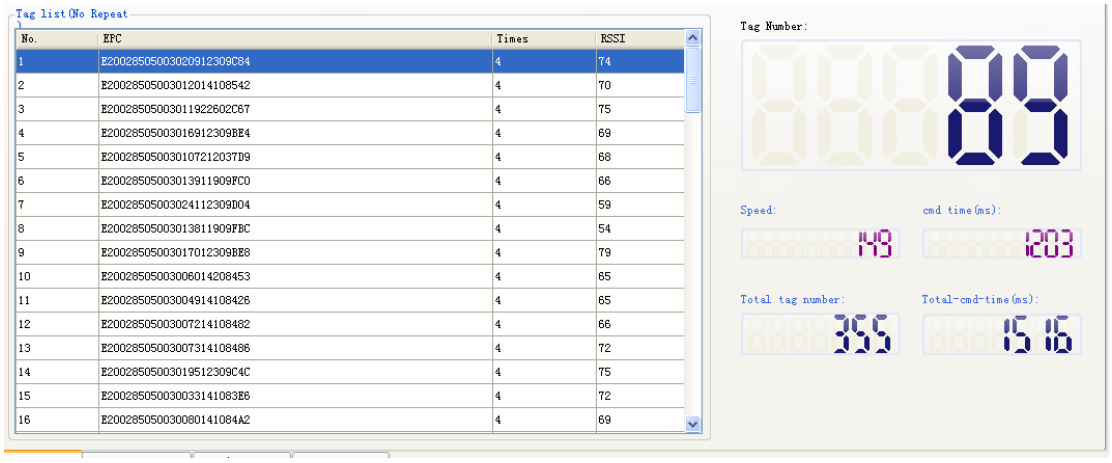
like 

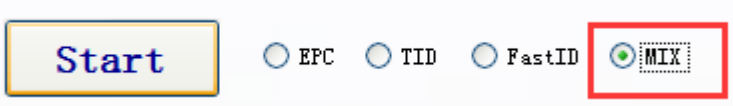
Select other condition



Note: about Q, S choice, a single tag or less number must be S0, a lot of tag queries using S1 or S2, S3. 2^Q equal tag number is better. If it is a single query effect must use S0
if Session select AUTO, only effective by query EPC. For this demo, session is AUTO, reader will read tag by preset antenna. Other session ,you can select ant by you specified. Also if you write demo by yourself, you can specified antenna with Session-AUTO too.

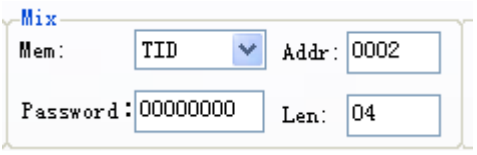
（2）Click 



（3）if select Mix query 

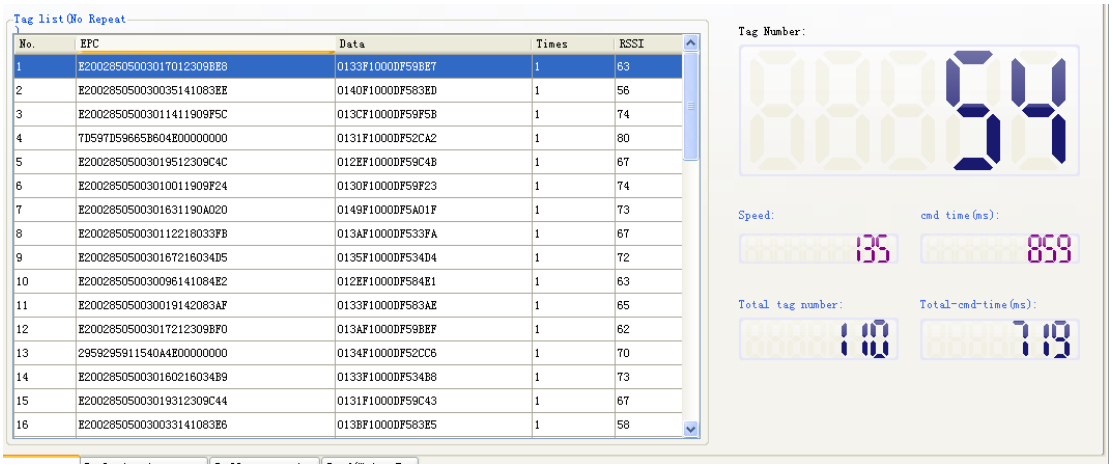
,we

can select read memory, for example:

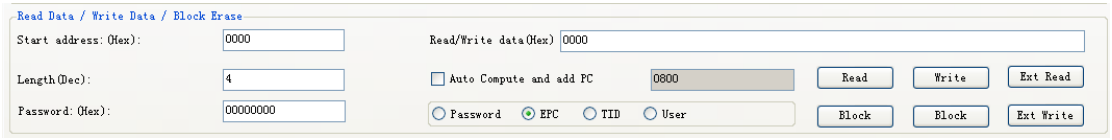


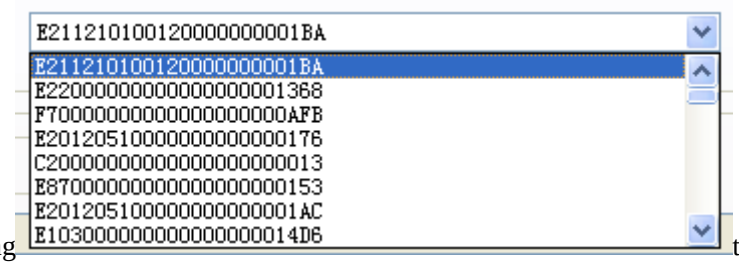
,click 

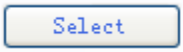
,can see:



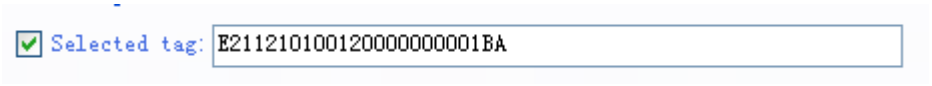
4.2 Read Data, Write Data, Block Erase

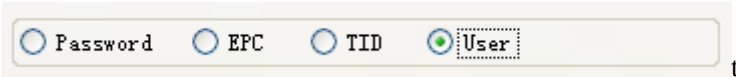


<1> Select one tag 

then click 

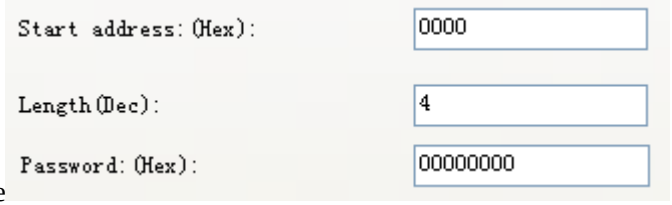
, check



Select memory 

to be operation

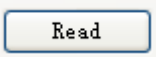
(1) Read data operation

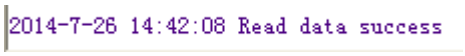
<1> Input data like 

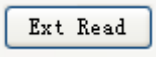
Start address: 0x00 stand in start to read data from first word in the designated storage area, 0x01 stand in start to read data from second word in the designated storage area, and so on.

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> Click 

can see 



is used to read large memory of tag.

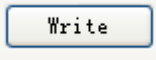
(2) Write data operation

<1> Input Write data word address

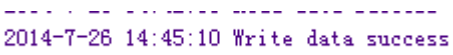
and Password

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

<2>Input data what you want to write like

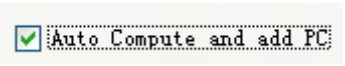
<3> Click 

can see

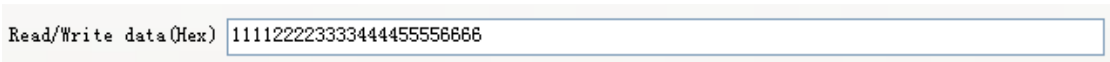


Note: write data can be used to change the EPC number (the method is as follows)

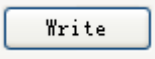
<1> Choose memory 

,and select 

<3>Write EPC number



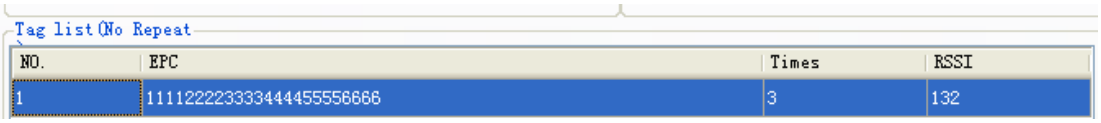
（EPC memory Address of tag is 2）

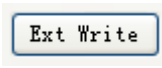
<4> Click 

can see

2014-7-26 14:45:10 Write data success

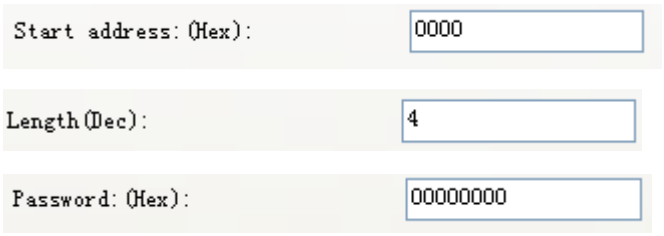
Then query tag EPC, can see





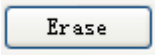
is used to Write large memory of tag.

(3) Input erase data address and length

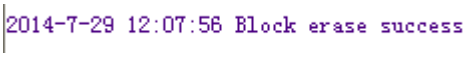


Start address: 0x00, the first word of data (from left) is written in address 0x00 of the designated storage area, and so on.

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

<4> Click 

can see



then the data will be set to 0

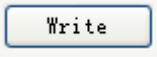
(4) Write block operation

<1> Input Write data word address

and Password

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

<2>Input data what you want to write like

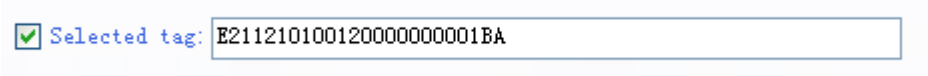
<3> Click 

can see

2014-7-26 14:45:10 Write data success

4.3Revise the password

(1) Select one tag



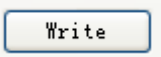
Select memory 

to be operation

(2) Write access password 

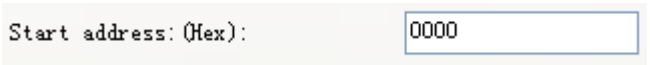
Access password: default is 00000000, if you have changed to others, you should input right values.

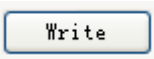
(3) Revise the access password 12345678: Write

Click 

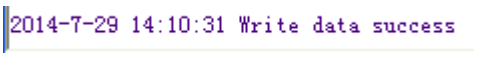
.

(4) Revise the kill password 12345678: Write

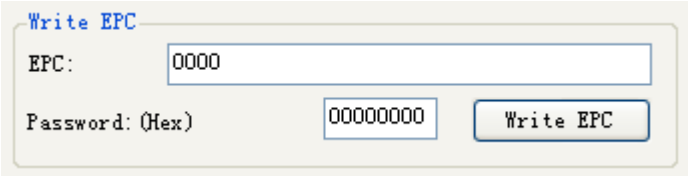


Click 

(5) If succeed, we can see



4.4 Write EPC

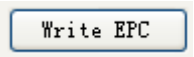


(1) Write access password (If EPC area of the tag has not set password protection, we can write 8 data arbitrarily)

(2) Write EPC.

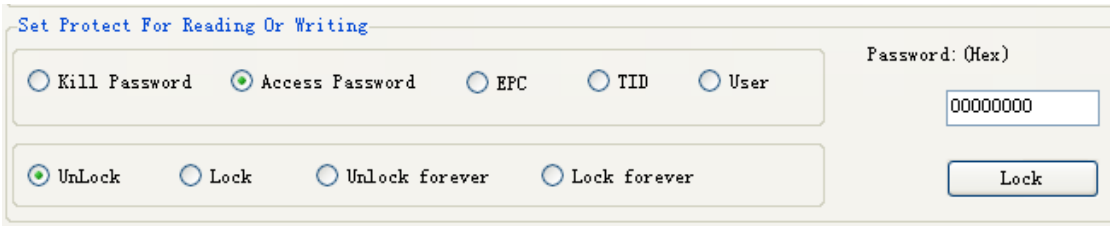
(3) Click 

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

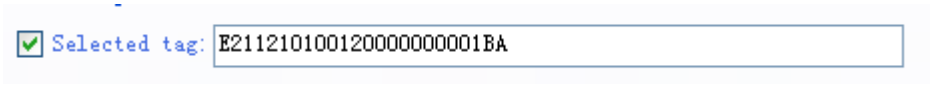
When there are many or EPC pieces of tag in the effective range of antenna, and the access password of one tag is the same as you entered, or EPC area of tag set no password protection, click 

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

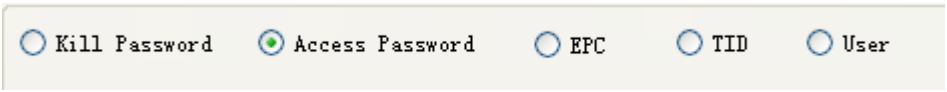
4.5 Lock Operation



(1) Select one tag



(2) select memory



to be operation

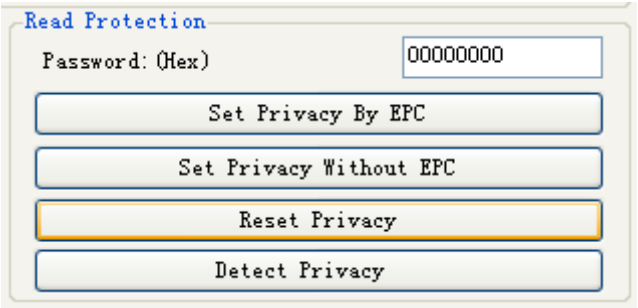
(3) select protect type

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

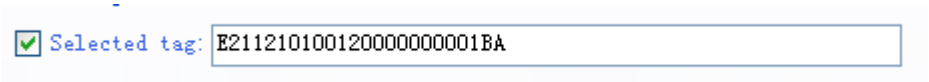
(5) Click 

then, the option is over.

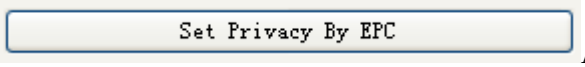
4.6 Read Protection



Select one tag

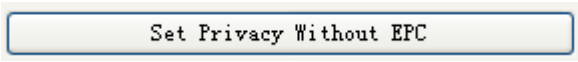


(1) Set Single Tag Read Protection

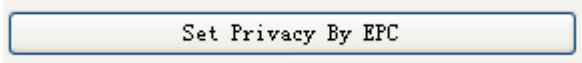


According to EPC number of the tag, setting read protection, make tag unable to be read and written by any order, even if query the tag, it is unable to get EPC number of the tag. Only NXP UCODE EPC G2X tags valid.

(2) Set Single Tag Read Protection without EPC



can set tag read protection in the effective range of antenna

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

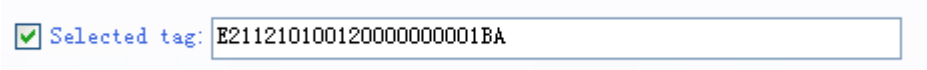
<1> Click 

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.

4.7 EAS Alarm

Select one tag



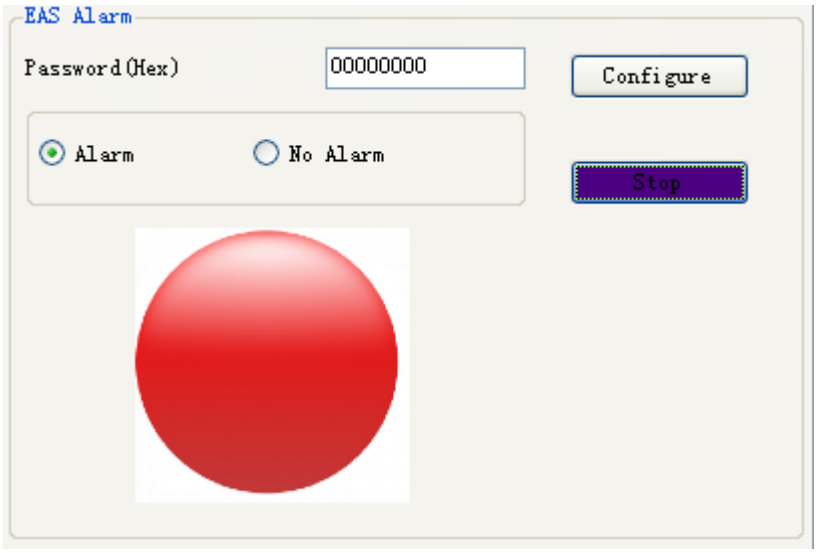
(1) Alarm setting

<3> Choose alarm 

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

(2) Check alarm without EPC and access password

<1> Click check alarm



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

<2> EAS alarm:

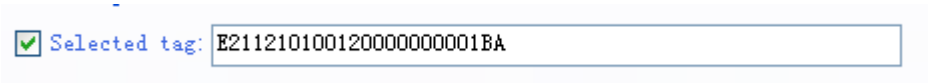
2014-7-29 14:27:37 EAS Alarm

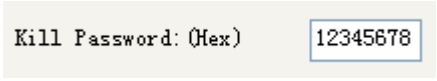
No EAS alarm:

2014-7-29 14:28:26 No EAS Alarm

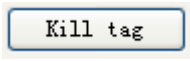
4.8 Kill Tag（Permanently Kill）

(1) Select one tag



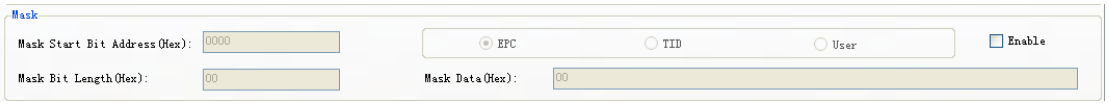
(2) Write 

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

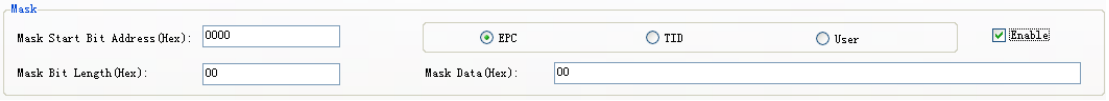
(3) Click 

,if success, the tag is killed.

4.9 Mask conditions



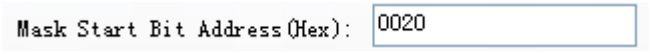
check enable

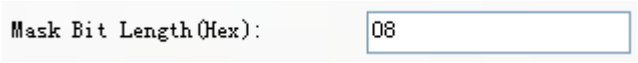


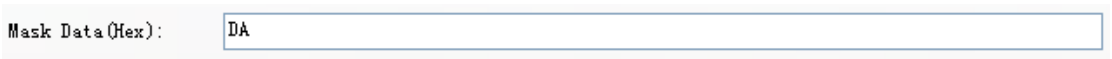
Only check enable can do mask operation。

For example, EPC mask：

Choose EPC area：





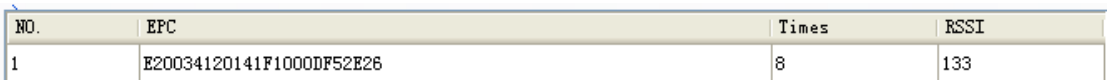


Only the first byte of tag's EPC is DA could response.

For example, TID mask：

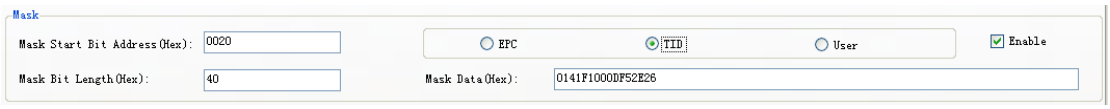
<1>Query TID 

Can see TID



NO.	EPC	Times	RSSI
1	E20034120141F1000DF52E26	8	133

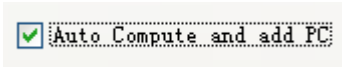
<Mask condition>

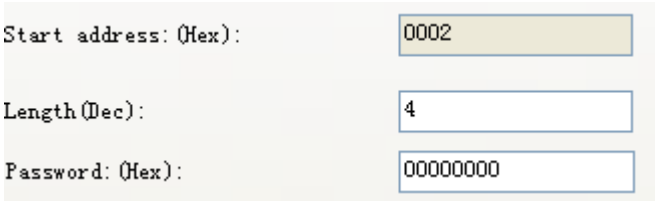


For example change EPC :

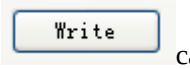
〈2〉 select

and

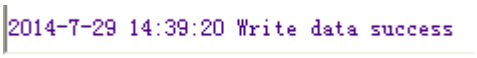




<3> Write （EPC memory Address of tag Is 2）

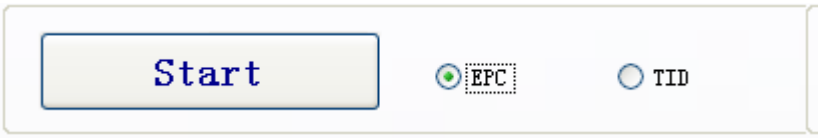
<4> Click 

can see



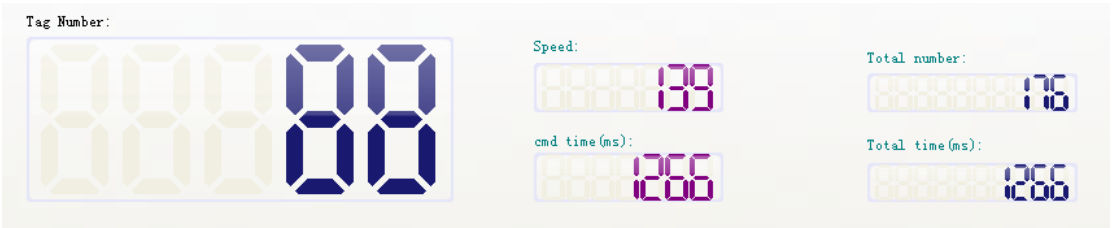
5. Buffer operation

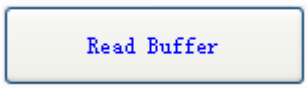
(1) Select EPC/TID query. For example: EPC



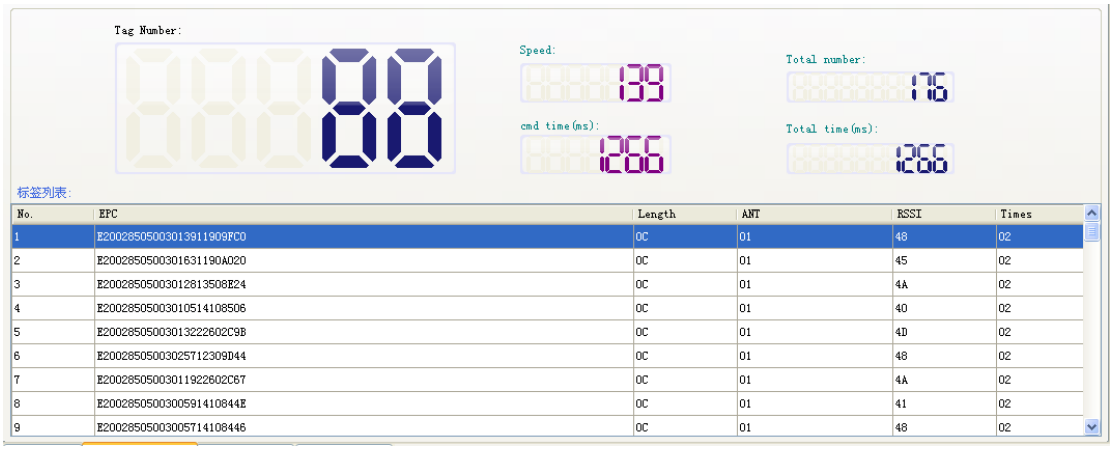
Select antenna 

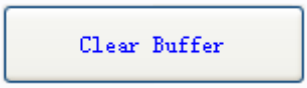
This demo is used Q=6,S=0 for TID query, S= AUTO for EPC query, Target A to inventory tag, if there are some tag.



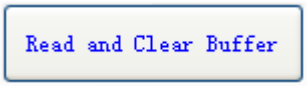
(2) 

is used to read tag in the buffer, if there are tag



(3) 

is used to clear tag information in the buffer.

(4) 

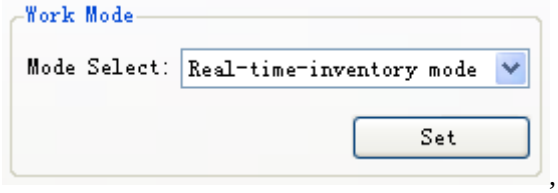
is used to read out tag and clear tag in the buffer.

(5) 

is used to get

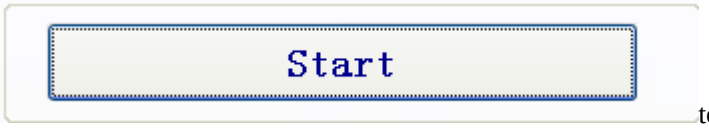
6. Auto real-time-query mode

(1) on reader work mode setting, you should set reader to

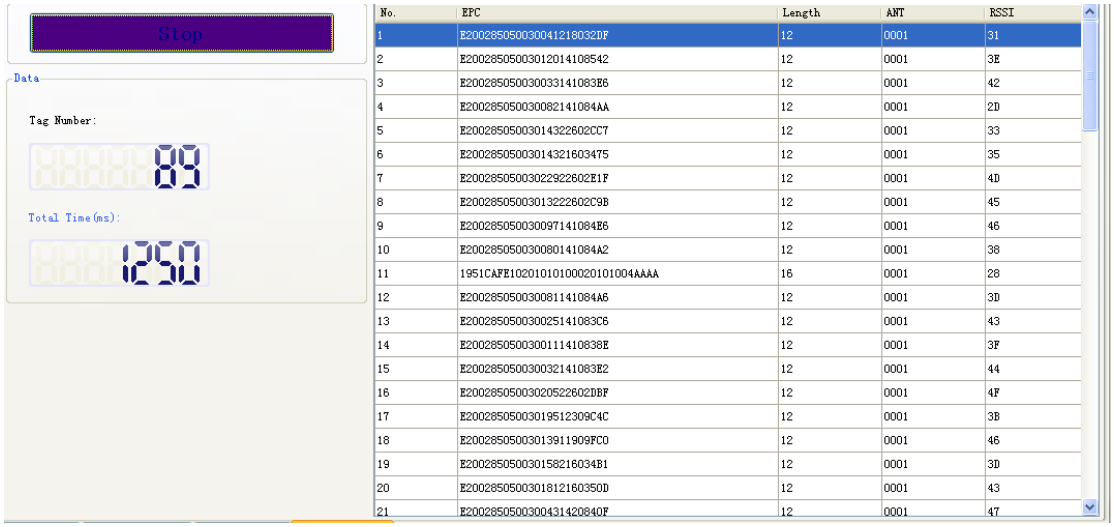


,

(2)on page "Real time inventory" , Click



to get data, if reader read tag, you can see that:



7. 18000-6B Test

7.1 Query Tag

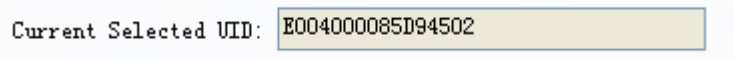
Click button start

if read tag, we can see:

No.	ID	ANT (4, 3, 2, 1)	Times	RSSI
1	E004000085D94502	0001	1	112

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

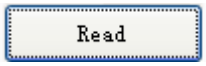
Select one tag from tag list. and double click. Then we can see



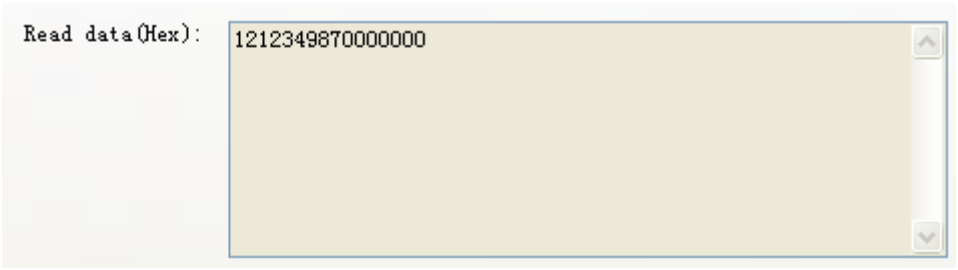
(1) 'Read data' input data for example:

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.

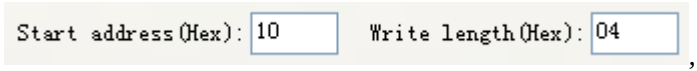
Read length: pointed to the number of bytes to read. Range is 1~32. If Start address + Read length greater than 224, or Read length greater than 32 or is zero, reader will return parameter error information. The high bytes of Read length write in the low address in tag.

,then click 

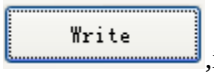
,

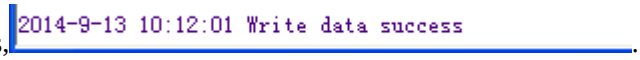
If success, 

(2)'Write data' for example:



,

Then click 

,if success, 

.

(3) 

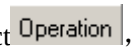
lock The specified byte.

(4) 

Check The specified byte whether locked.

8. Config TCPIP

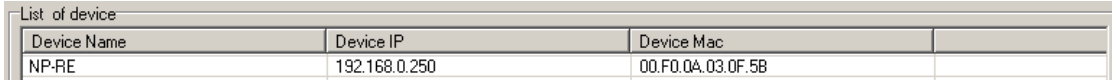
8.1 Web config

1.Select 

, click 

Search.

If device connected.

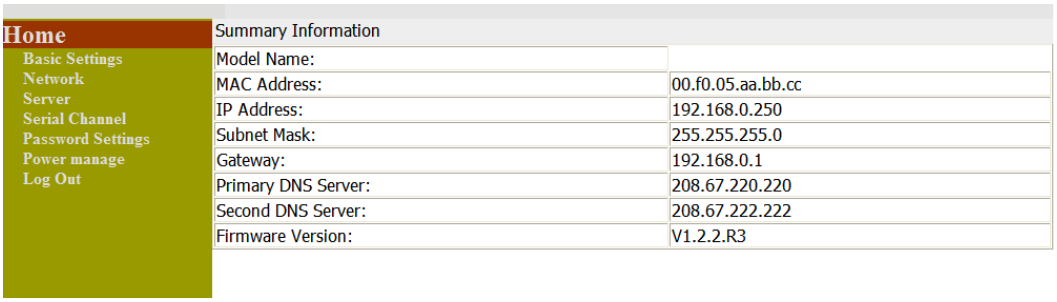


Select the device

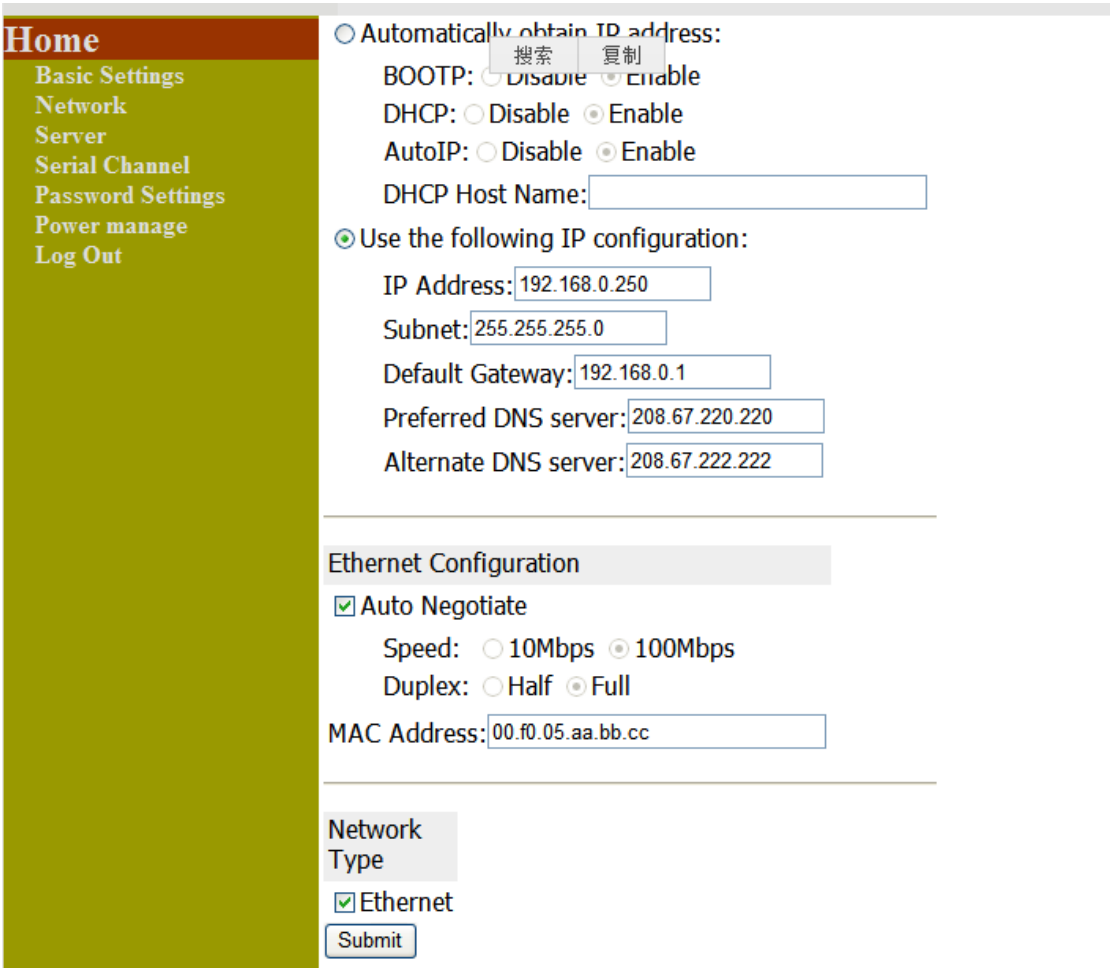
2.Select 

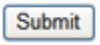
,default user name and password are admin.

Login.



（1）Select Network，default:



Finished click 

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（2）Select 

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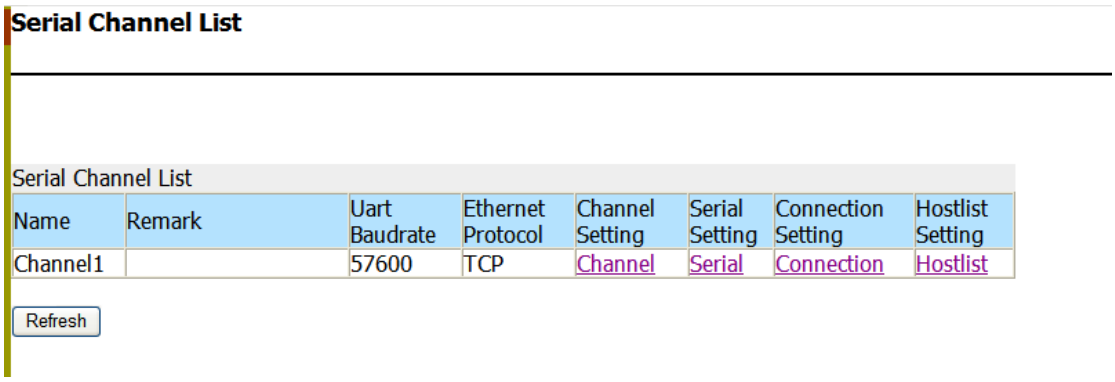
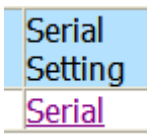
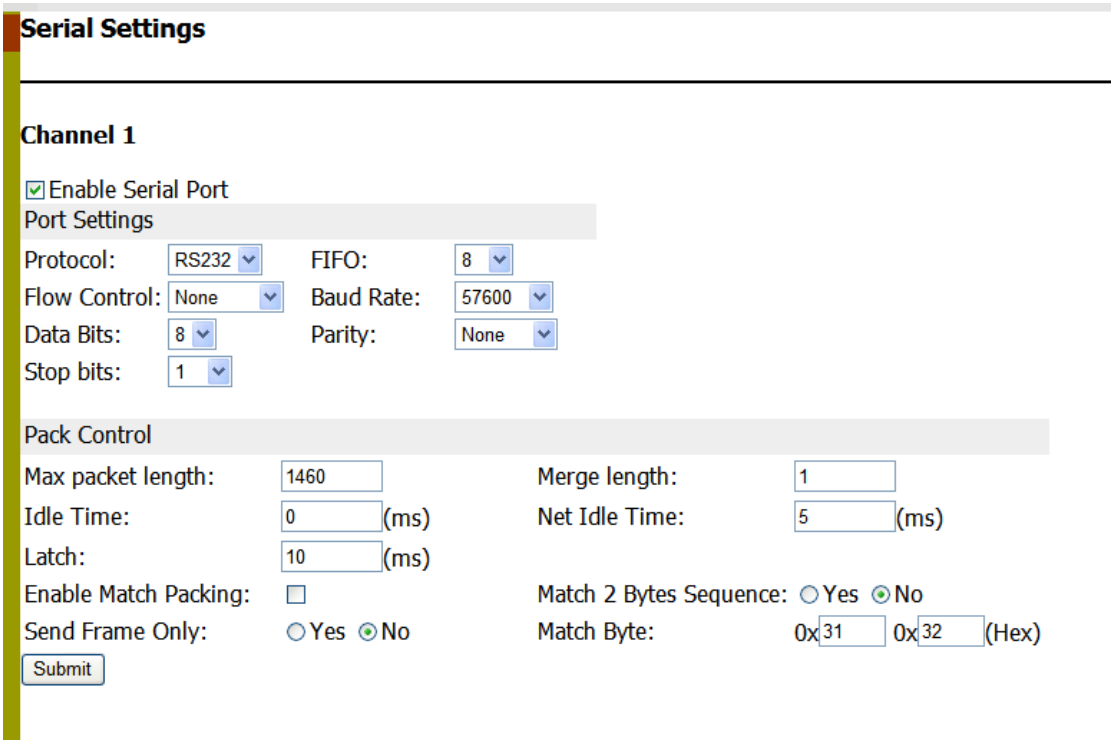
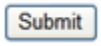
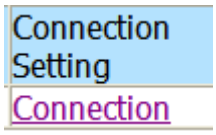
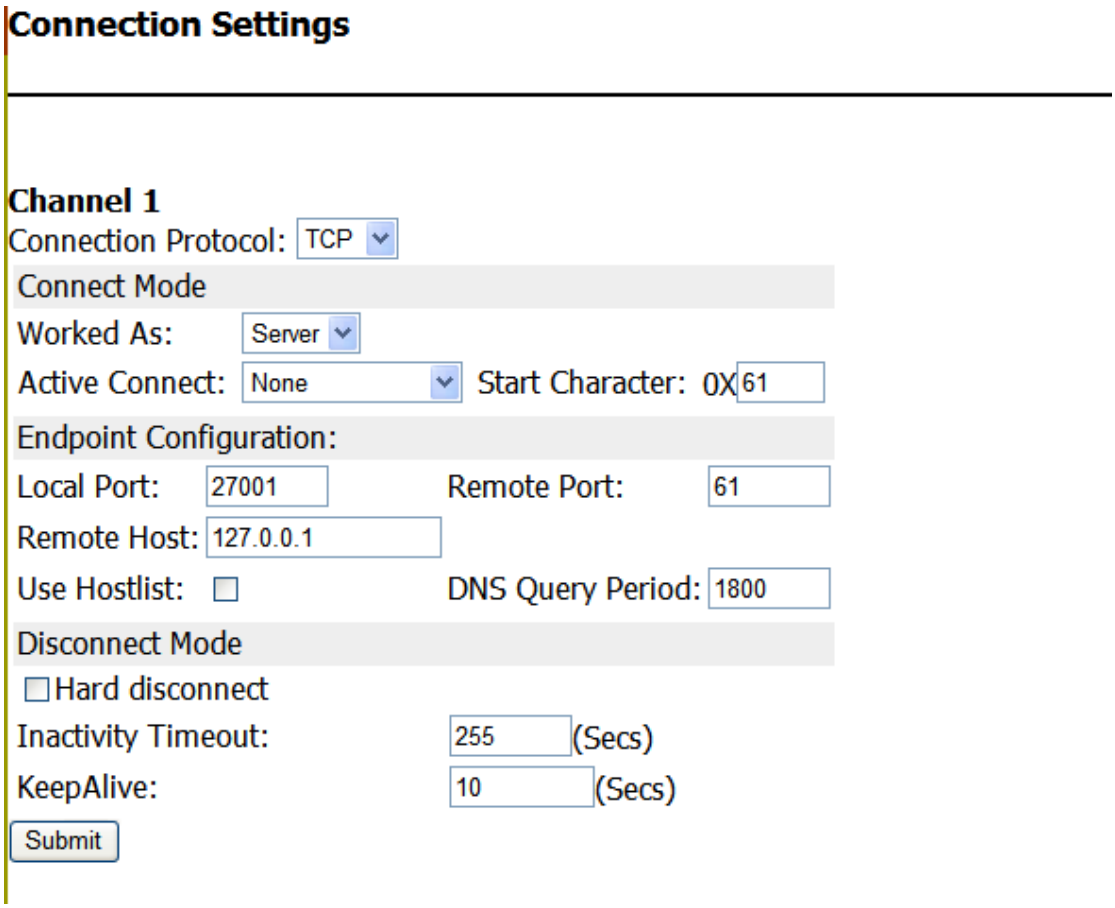


Click 



Finished .click 

Click 



Finished click 

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（4）The end select 

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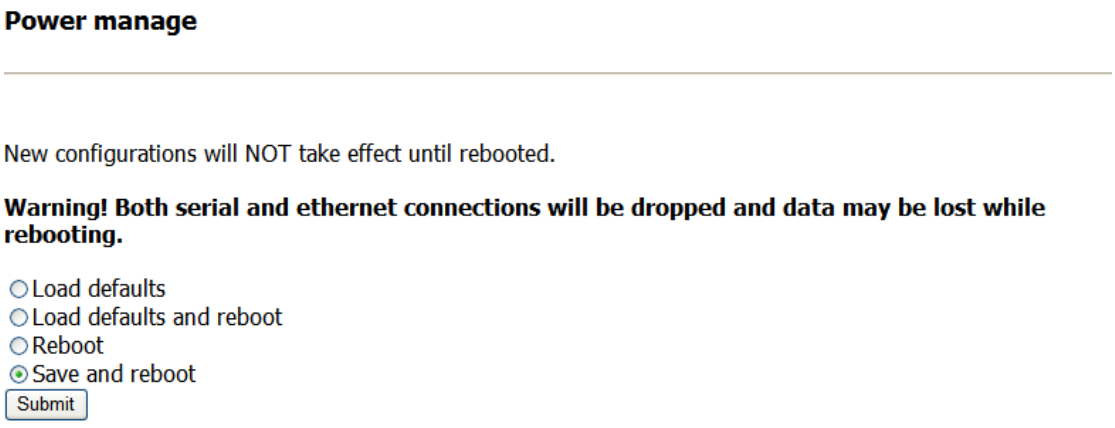

Click 

，Restart your device.

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9. FCC Statement

This device comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

● This device does not cause harmful interference.

● This device must accept any interference received, including interference that may cause undesired operation.

If this device is modified without authorization from Friendcom, the device may no longer comply with FCC requirements for Class B digital devices. In that a case, your right to use the device may be limited by FCC regulations. Moreover, you may be required to correct any interference to radio or television communications at your own expense.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This device generates, uses and radiates radio frequency energy. If it is not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user may take one or more of the following measures:

● Reorient or relocate the receiving antenna.

● Reinforce the separation between the device and receiver.

● Connect the device into an outlet on a circuit different from that to which the receiver is connected.

● Consult the dealer or an experienced radio or TV technician for assistance.

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.