CL7206B6
Integrated Fixed Reader
User Manual (V1.0.1)

Welcome to be CLOU's user.

Thanks for choosing CLOU's Integrated Fixed Reader CL7206B6. We believe our device will bring convenience for your work.

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I, Technical specifications

1.1 Product features

CL7206B6 is a high cost-effective RFID reader which ingrates reader module & antenna. It complies with ISO18000-6C/6B protocols, working frequency support international main frequency bands: 902MHz ~928MHz, 860MHz ~865MHz , output power 20~27dBm adjustable. This device is featured by long range, high-speed reading, & high accuracy, high sensitivity, strong anti-interference etc.

1.2 Main functions & technical specifications

1.2.1 The main function

- Air interface protocol: supports all mandatory commands ISO18000-6C
- Rich communication interfaces (serial port, RS485)
- Support tag data filtering
- RF output power adjustable
- Operating modes: fixed frequency / hopping optional
- Support online upgrade
- I / O interface: 1 channel optocoupler inputs, 2 outputs 5V output and Wiegand (Wiegand and 5V output multiplexing)

1.2.2 Performance Parameters

- Operating frequency: GB, 920MHz ~ 925MHz, FCC, 902MHz ~ 928MHz Optional
- RF output power (Port): 27dBm ± 1dB (MAX)
- Output power adjustment: 1 dB step
- Read the label from the 0 to 5 m (and tag antenna and the use of environment-related)
- Channel bandwidth: <200KHz
- Built circularly polarized antenna VSWR: ≤1.2: 1
- Built-in circularly polarized antenna gain: ≥8dBi
- RS232 serial communication rate: 115200bps (default), 19200 bps, 9600bps
- RS485 interface communication rate: 115200bps (default), 19200 bps, 9600bps
- support Wiegand 26,34,66 Interface
- Power (power adapter): AC input 100V ~ 240V, 50Hz ~ 60Hz
  DC output 5V/4A
- High degree of protection: IP65

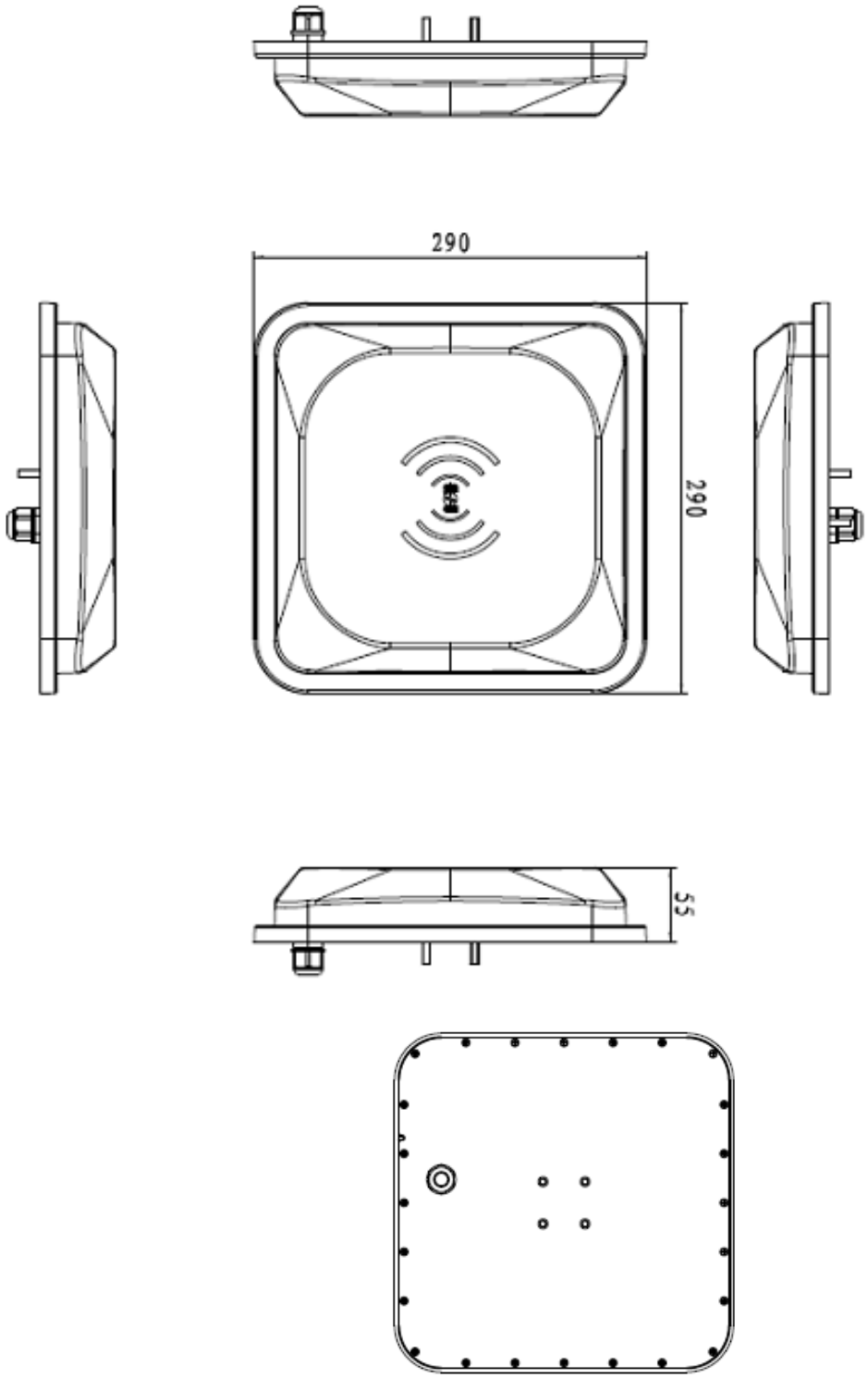
1.2.3 Work Environment

Operating temperature range: -20 ℃ ~ + 70 ℃

Relative humidity: 5% RH ~ 90% RH (+ 25 ℃)

II, Physical structure

2.1 Physical structure



Pic 2-1　CL7206B6 physical structure

CL7206B6 reader size

290mm×290mm×55mm(accessories not included)

2.2 Weight

1.6kg (accessories not included)

2.3 Interface definition

This reader use 14 cores cable for power support and data communication. Detailed definitions as in following table:

cable	color	Definition
1	Black	serial port summit
2	Brown	Serial port receiving
3	Red	RS485+
4	Orange	RS485-
5	Yellow	GPI
6	Green	GPO1/Wiegand 0
7	Blue	GPO2/Wiegand 1
8	Purper	5V
9	Gray	5V
10	White	5V
11	Light blue	GND
12	Light green	GND
13	Light brown	GND
14	Black/white	GND

III, Installation description

3.1 Precautions

In order to ensure normal and stable operation of the equipment and your personal and property safety, please carefully read the following notes before installing CL7206B6 reader device：

1. First check whether the outlet is connected to the ground, and check if the local power supply voltage meet reader voltage requirements;
2. Check if the device is connected tightly and the metal house of the device is connected with ground;
3. Pay attention to the network cable and serial cable type selection and length restrictions;
   - ●Serial port cable length 5m maximum.
   - ●RS485 length 80m maximum.
4. When installing multiple readers, pay attention to reader antenna display way & the minimum distance between the antennas, avoid the situation that interference may affect the reader's performance;

3.2 , Installation conditions

Before installing the reader, please carefully check and confirm the product is intact, the accessories are complete, if there are any damages or shortage, please contact your supplier.

3.3 Device connection

3.3.1 Connect the power adapter

Connect power adapter to AC power socket, and tighten the other end to reader’s power port.

After the circuit is connected, wait for about 1 second, reader makes two alarming sound and enter into initialization state, after initialization is finished, reader enter into standby mode.

3.3.2 Connecting a PC

☆ Reader cable interface includes all signal cords in the interface definition table.

☆RS-232 interface is used for short-range communication (less than 10m), can be connected to a PC via DB9 connector for communication.

☆ R485 port is used for longer range serial port communications (less than 80m);

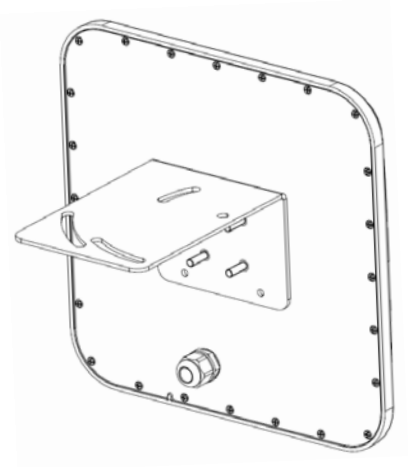
3.4 Installation

According to onsite situation, confirm the reader reading range, adjust antenna angle to ensure reading delivers best performance.

3.5 Installation steps

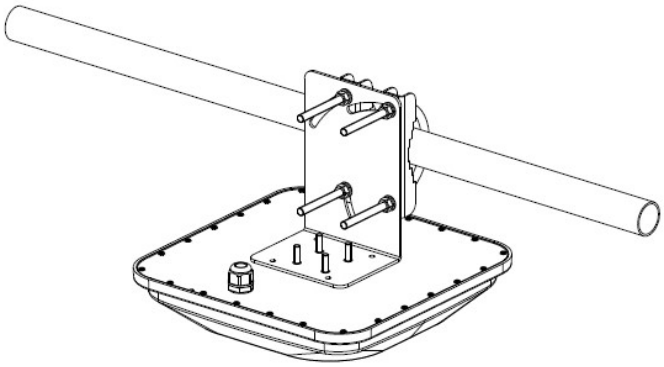
3.5.1 Horizontal pole installation

(1) Align the L-shaped mounting bracket against the screw poles on bottom of reader housing, then install the rubber and screw the M6 nuts, refer to pic 3-1:



Pic 3-1　L-shaped mounting bracket installation

(2) Using two U-bolts and two toothed installation bracket to fix the reader on vertical rod through the L-bracket. As per illustrated in picture 3-2.



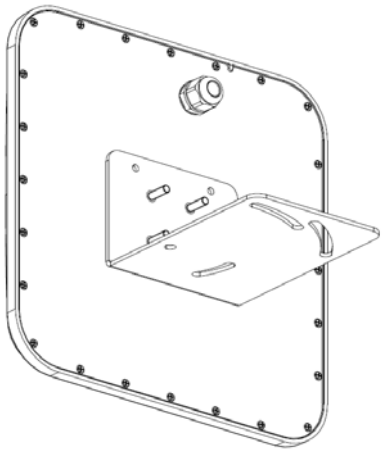
Pic 3-2　Horizontal pole installation

3.5.2　Vertical pole installation

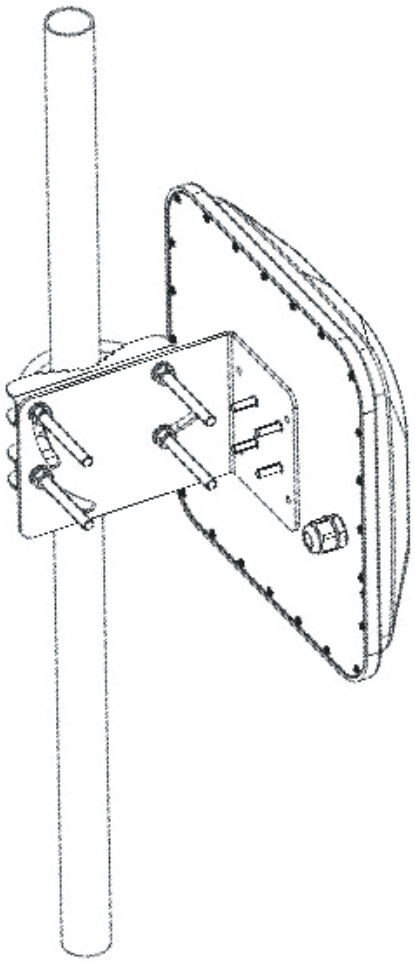
(1) Align the L-shaped mounting bracket against the screw poles on bottom of reader housing, then install the rubber and screw the M6 nuts, refer to pic 3-3:

(2) Using two U-bolts and two toothed installation bracket to fix the reader on vertical rod through the L-bracket , refer to pic 3--4.

Note: This installation method is suitable for 50mm ~ 100mm diameter horizontal pole.



Pic 3-3　L-shaped mounting bracket installation



Pic 3-4　Vertical pole installation

3.6 Acceptance

3.6.1 checking physical installation

Check & ensure the reader is fixed safely;

Check & ensure cables are connected securely.

Check & ensure screws are screwed firmly.

3.6.2 checking reader performance

☆ check & confirm the reader is working normally ;

☆ check & confirm the reading range is set properly.

IV, Operation Guide

4.1 Demo software functions

The demo software is for system control, communication mode selection, parameters setting, tag reading/writing & data display etc.

4.2 DEMO software application

Software environment

Windows 2000 Service Pack 3, Windows Server 2003, Windows XP Service Pack 2, Windows 7.

Hardware environment

P4/1.7GHzor above，512M memory or above、40G hardware disk.

4.3 Demo software version number.

Demo V1.0.0

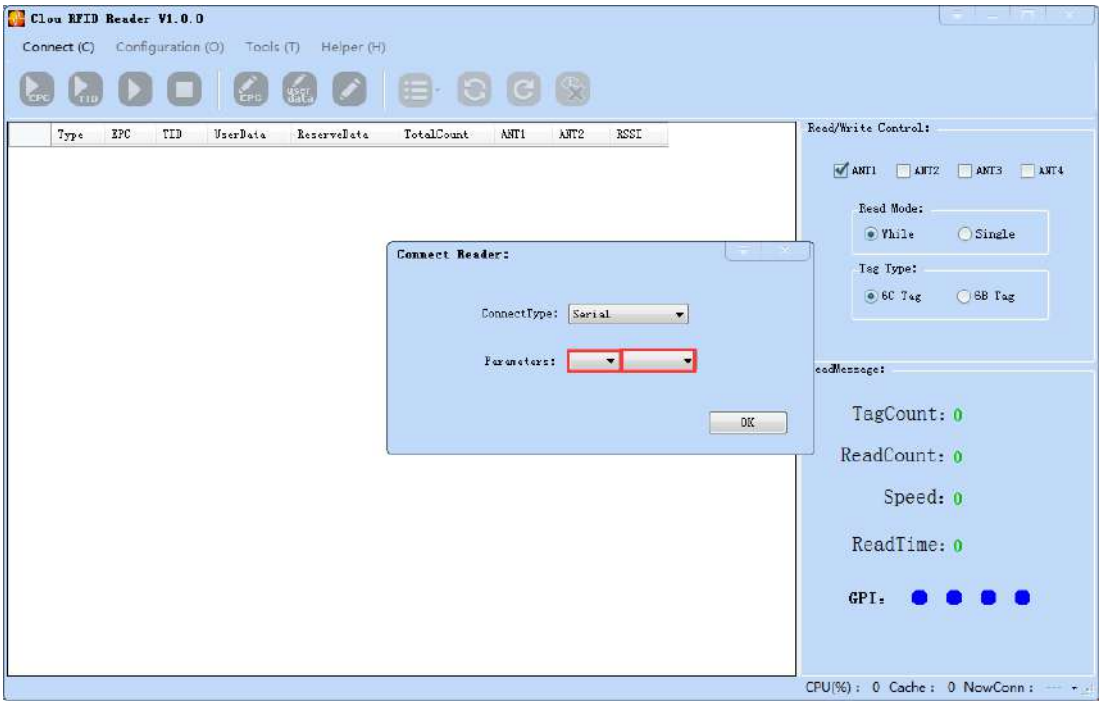
4.4 Test demo operations

4.4.1 How to connect the reader

All functions work only after a successful connection.

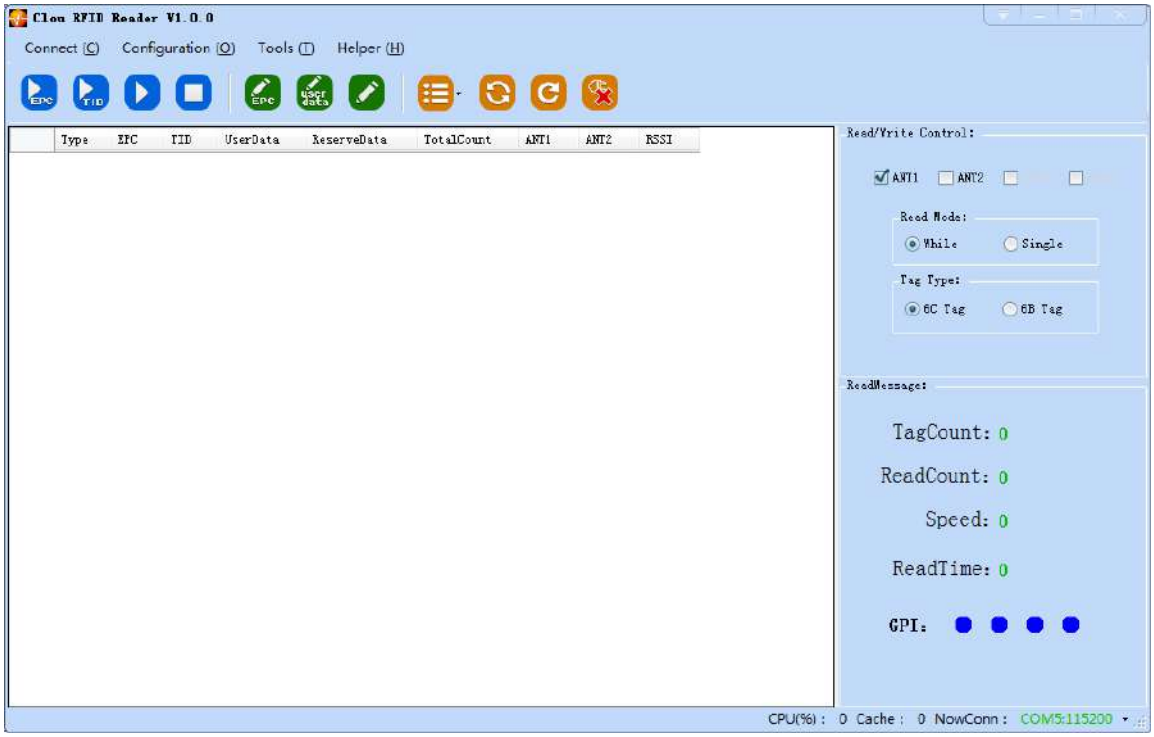
4.4.1.1 Serial port connection

After the reader power supply cable & PC communication cable are connected well, open Demo software, the icons on main UI are all in grey color, means reader is not connected. Select communication/connect mode as"RS232 connect", select parameter as "COM?"("?" means COM No.), communication port as "115200" (default value) , click "OK". as in picture 4-1.



Picture 4-1 Serial port connection

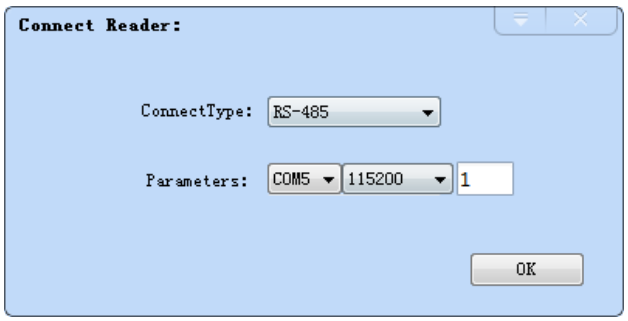
When successfully connected, all icons are light, as per in picture 4-1, means Serial port connection success.



Picture 4-2 RS232 connection successful

4.4.1.2 RS485 connection

Choose "485 connection (COM)" in the draw-down list of connection way, choose "COM?" ("?" stands for COM No."), choose communicate rate as "115200", input RS485 address and then click "OK" button. As per in picture 4-3.

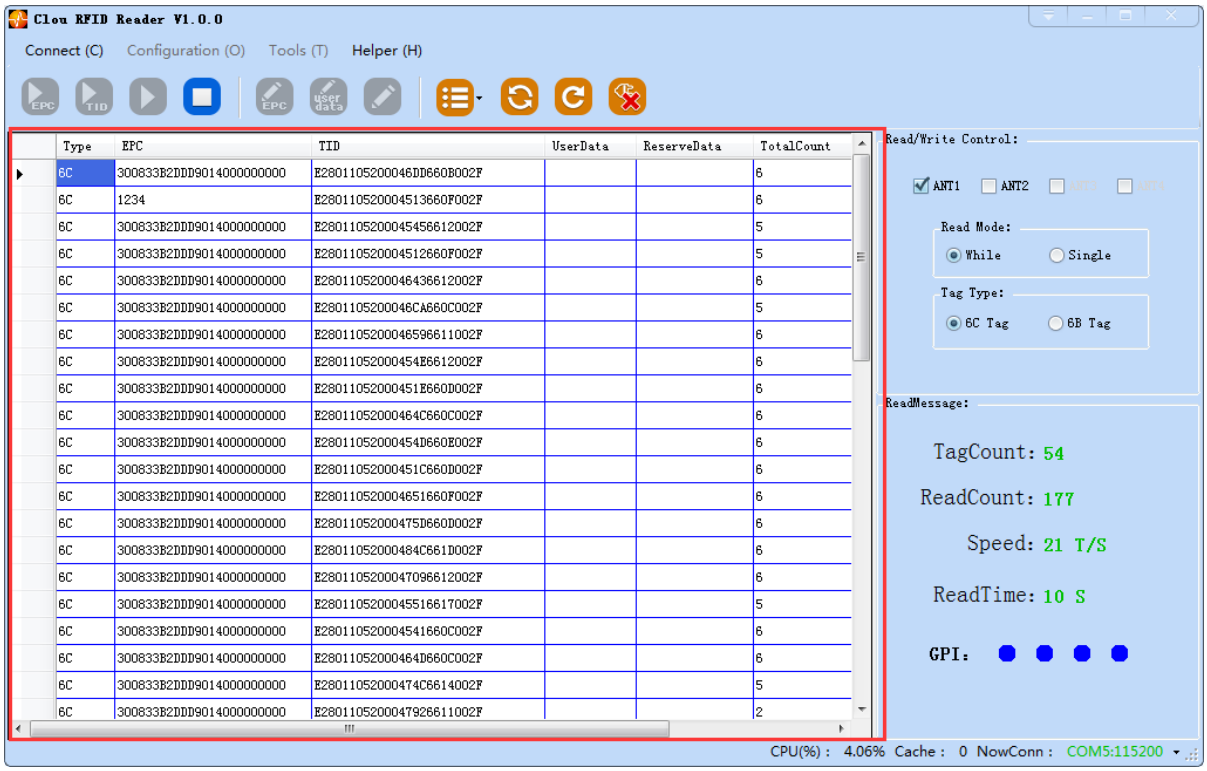


Picture4-3 485 communication connection

RS485 address default is 1.

RS485 address range is 1~255.

4.4.2 Data display



Picture 4-4 data display area parameters definition

Type：Tag type 6C、6B

EPC: Tag's EPC data, can write /read.

TID:　Tag's TID data, unique number, read only.

UserData：user data area, read/write.

ReserveData：reserved data area, to store tag password etc.

TotalCount：Total tag reading cycles.

ANT1：　No. 1 antenna reading cycles

RSSI：signal strength

4.4.2.1 Read EPC

Click button, data display area will show read EPC data. Can support EPC length 240bits maximum.

EPC display as hexadecimal string, length unit is word (1 word =2 bytes = 4 hexadecimal characters). If

you want to read user-defined length EPC data, please refer to 4.4.2.3 user-defined read.

4.4.2.2 Read TID

Click button, data display area will show the existing EPC data and TID data.

TID displays as hexadecimal string, length unit is word (1 word =2 bytes = 4 hexadecimal characters). TID default length is 6 words.

If you want to read user-defined length TID data, please refer to 4.4.2.3 user-defined read.

4.4.2.3 User-defined read

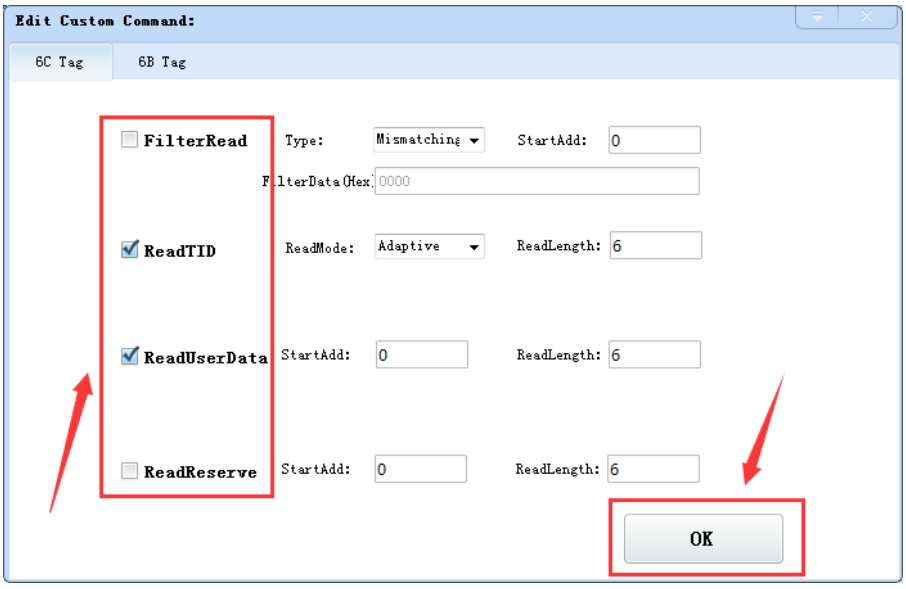
Click button, prompt box as in picture 4-5 ,4-6.

Choose "6C tag configuration" for matching reading, you can read matching tags through existing EPC or TID data.

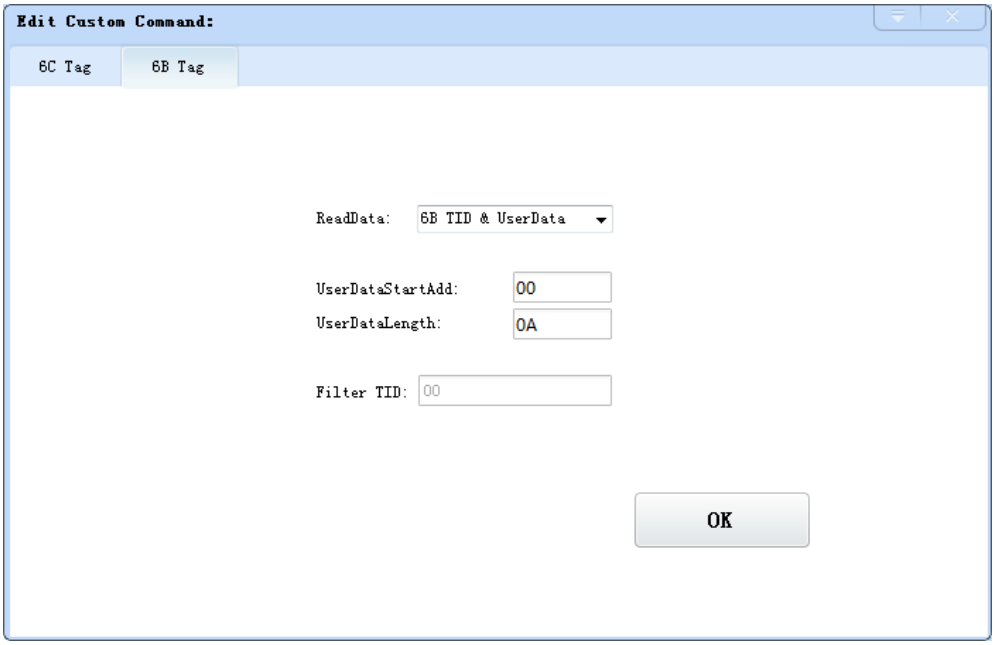
Read TID: choose tag TID data, read mode default as "self-adaptive", reading length unit is word.

Read user area: choose tag user area data, the start address & reading length takes "word" as unit.

Read reserved area: choose tag reserved area data, the start address & reading length takes "word" as unit.



Pic 4-5 6C tag user-defined configuration



Pic 4-6 6B tag user-defined configuration

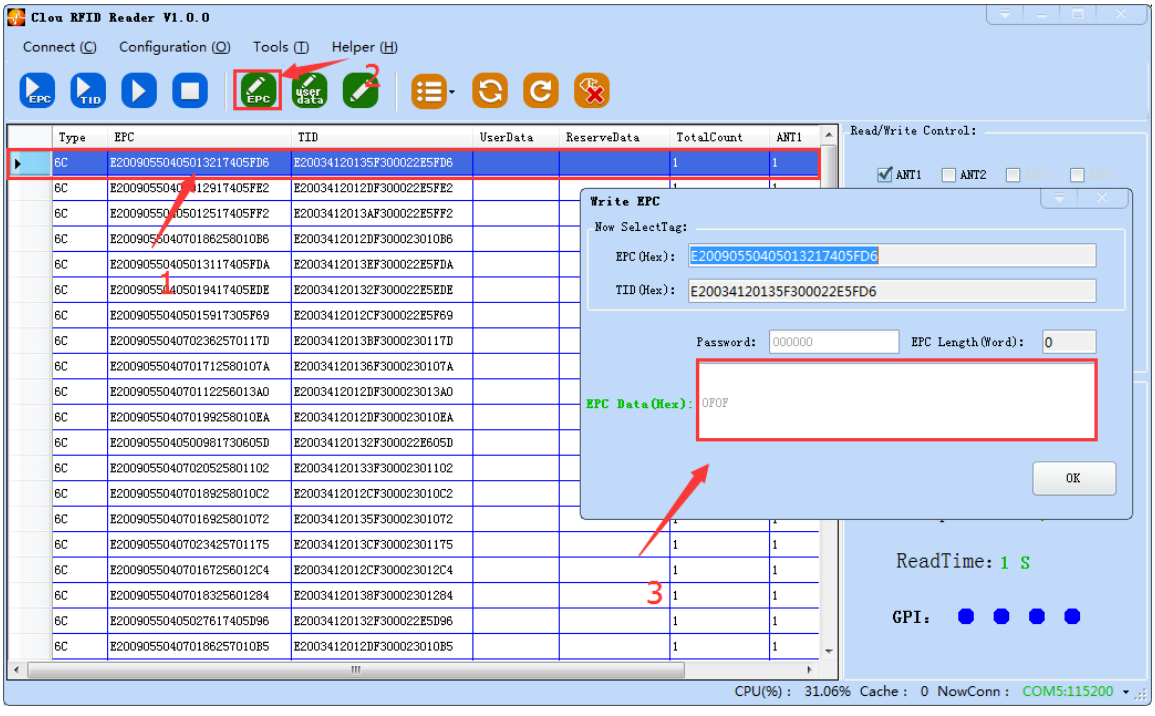
4.4.2.4 stop reading

Click button to stop all the read/write operations.

4.4.3 Write data

4.4.3.1 Write EPC data

Click button, prompt box as in picture 4-7.

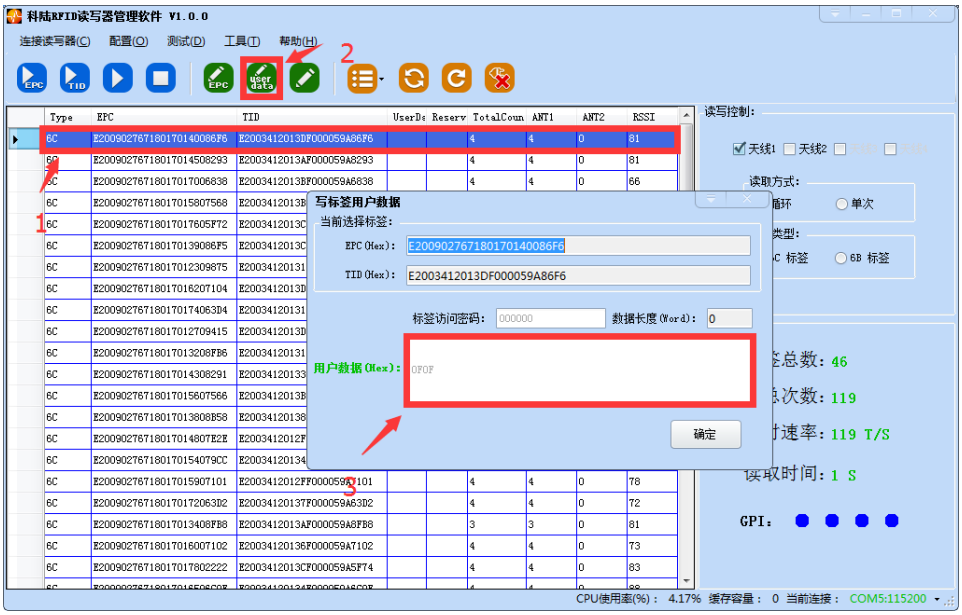


Picture 4-7　write EPC data

Choose one tag data (which includes TID information), input EPC data (Hexadecimal string), click "confirm".

4.4.3.2 Write user data

Click button, pop up dialog box as in picture 4-8

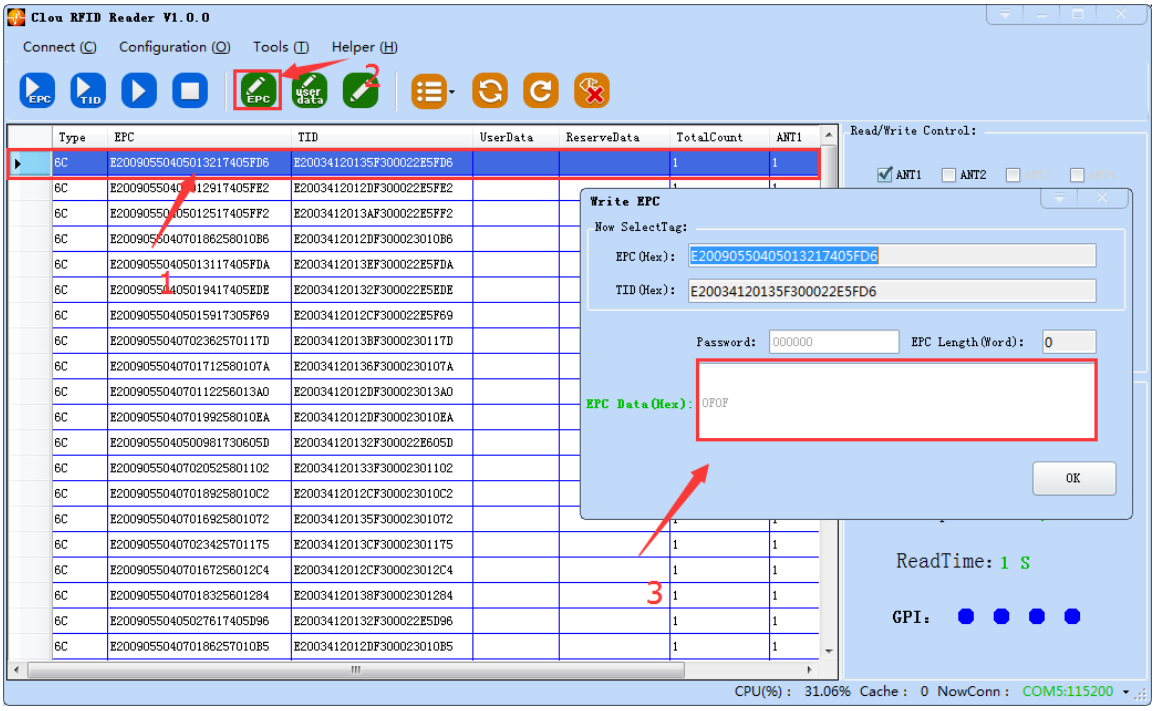


Pic 4-8 write user data

Choose one tag data (which includes TID information), input user data (Hexadecimal string), click "confirm".

4.4.3.3 user-defined definition tag operation

Click button, pop up dialog box as per picture 4-9 :



Pic 4-9 User-defined tag operation

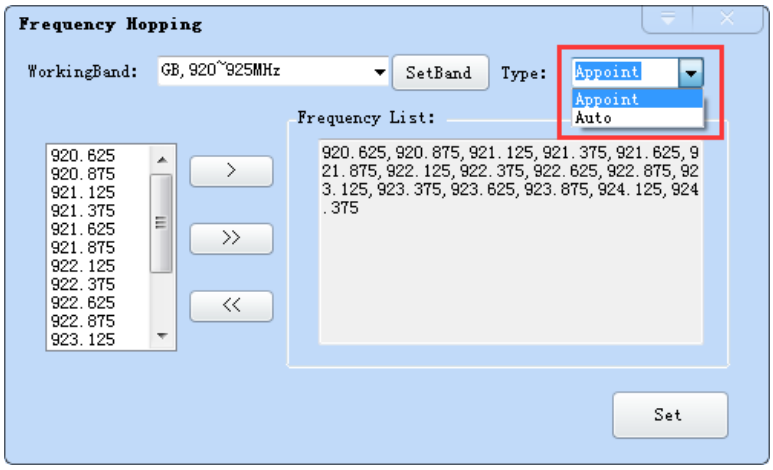
1 . choose one tag data;

2 . click "user-defined" button;

3 . Operate write/read/lock operations based on reader protocol.

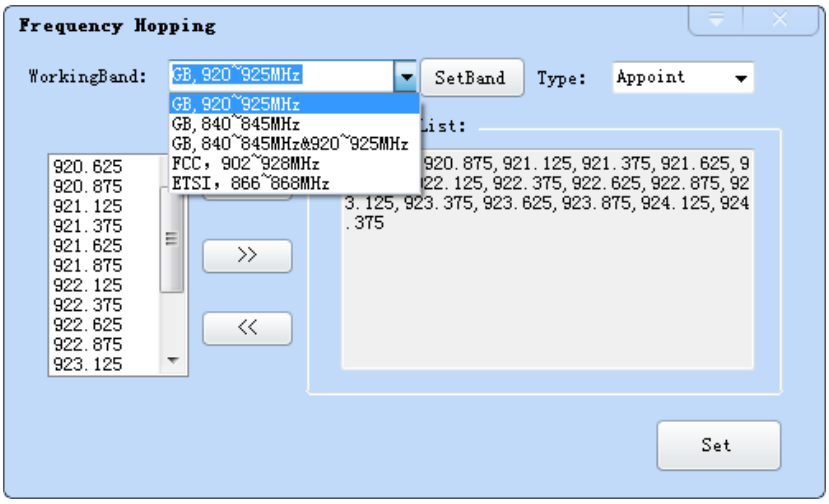
4.4.5 Hopping frequency management

At main UI, click "configuration"➔ RFID configuration➔ Hopping frequency management, a dialog pop up as per picture 4-15.



Picture 4-10 Hopping frequency management

In pull-down list of "working frequency", choose "GB,920-925MHz", click "setting frequency", choose frequency point (as per picture 4-15), click > button to import into the box on the right, click "configure" for confirmation; If you want to choose full frenqency hopping, just click >>. All the frequency points will be displayed in the box, click "configure" for confirmation. If click <<, all frenqency point in the box will be deleted.

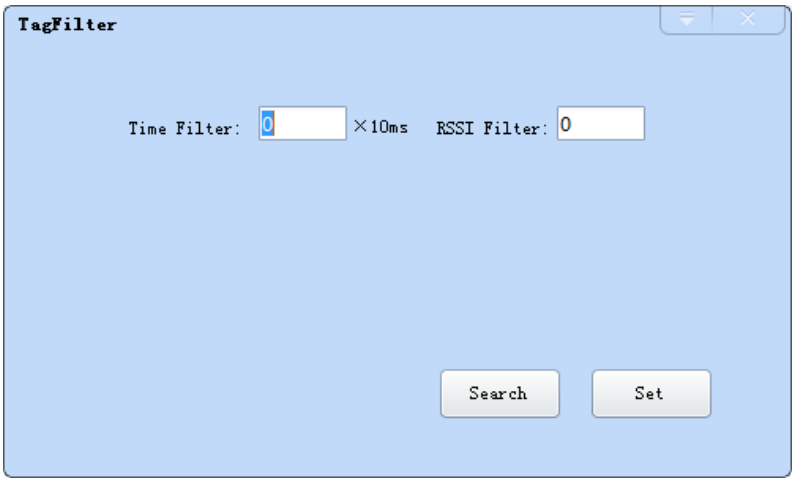


Picture4-11 FH selection

Notice: In hopping frequency management, the option "automatic" is for avoiding external signal interference, thus choosing high speed frequency hopping. Default setting is "automatic" as per indicated in picture 4-15.

4.4.6 tag filtering

Open the demo, click "configuration"→ "RFID configuration"→ "tag filtering", dialog box pop up as per in picture 4-16.



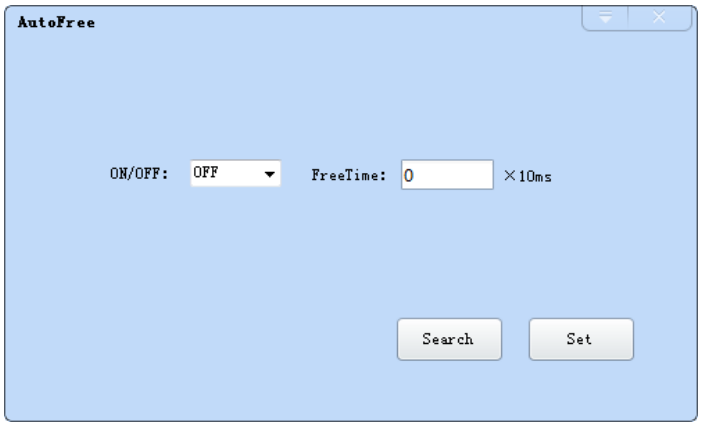
Picture4-12 tag filtering

Filtering time: means in an operation period, in designated filtering time, same tag data will be uploaded one time. 0~65535 , time unit: 10ms.

RSSI threshold value: when tag RSSI lower than threshold value, tag data won't be uploaded. Will be abandoned.

4.4.7 Automatic idle configuration

In main UI, click "configuration"→"RFID configuration"→ automatic idle→, dialog box pop up as per picture 4-17:



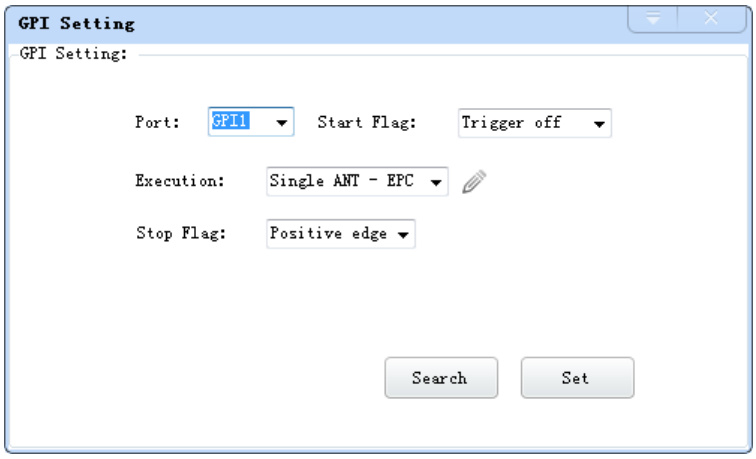
Picture 4-13 Automatic idle configuration

4.4.8 GPI/O configuration

GPI/O control provide enquiry and setting I/O port status, controlling I/O device functions.

GPI configuration

In Main UI, choose "configuration"➔GPI/O configuration➔ GPI configuration", pop up dialog box as per picture 4-18. Choose triggering conditions and click "configuration" for confirmation.



Pic 4-14 GPI configuration

Inquiry: inquiry each port triggering parameters.

Configuration: choose the port to be set and then click "configuration" for confirmation.

Triggering start condition: choose the mode from pull-down list.

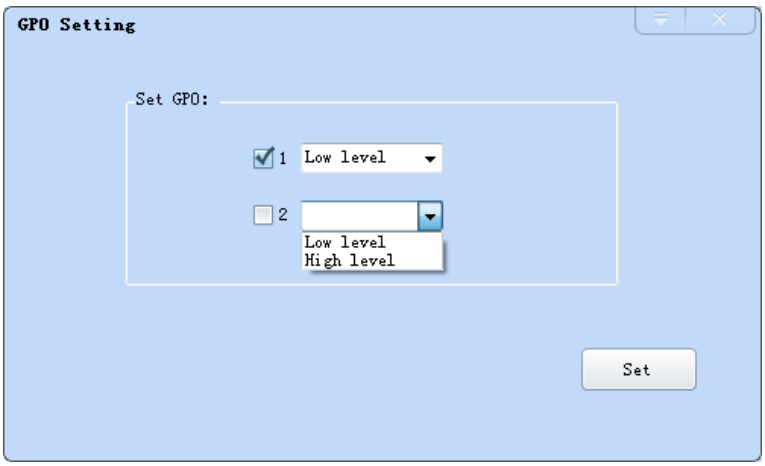
Triggering execution command: choose the mode from pull-down list.

Triggering stop condition: choose the mode from pull-down list.

Remarks: when triggering conditions are satisfied, reader will execute configured command.

GPO configuration

In main UI, choose " configuration"➔ "GPI/O configuration"➔ "GPO configuration", pop up dialog box as per picture 4-20.



Picture 4-15 GPO configuration

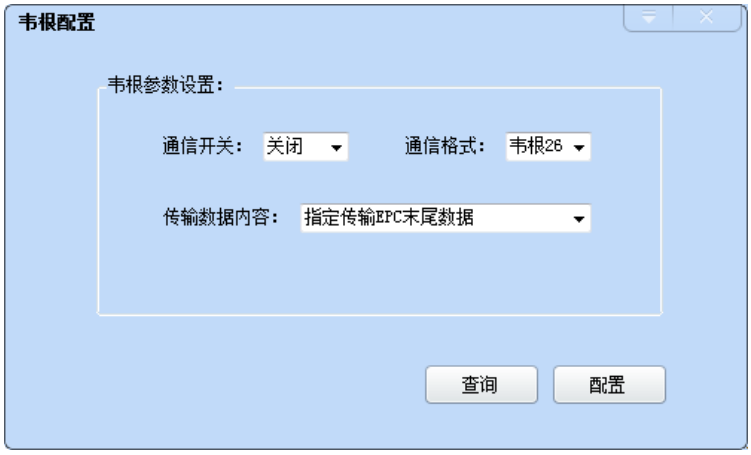
CL7206C reader only support two way GPO output, that's, "1" & "2"。

After high/low power level modification (setting) is finished, click "configuration" for setting operation.

4.4.9. Senior configurations

Wiegand configuration

Choose "configuration"➔ GPI/O configuration➔ Wiegand, pop up dialog box as below:



Pic 4-16 wiegand configuration

In the "Wiegand Parameter Settings" area, set the "communication switch" to "ON" state, and select the "communication format" and "transmit data content", click "Configuration" OK.

Wiegand port parameters configuration: modes include "Wiegand 26", "Wiegand 34" and "Wiegand 66."

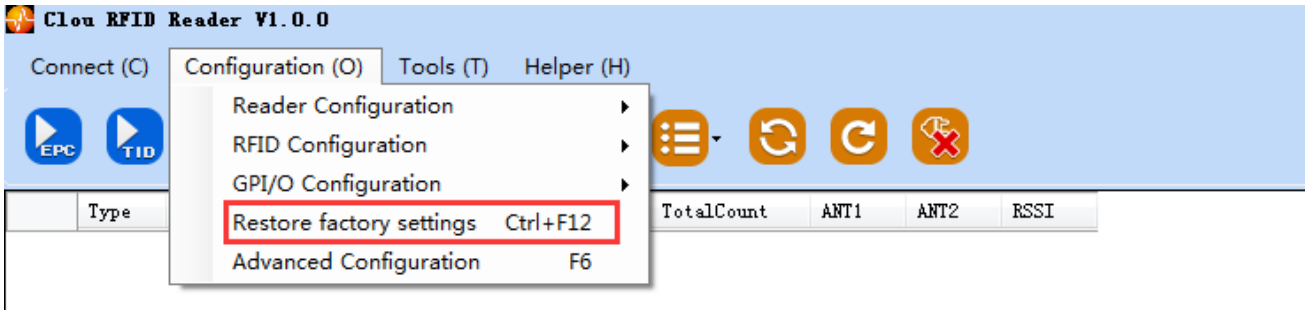
Wiegand 26: the EPC or TID data reported from Wiegand port is effective by the last three bytes

Wiegand 34: the EPC or TID data reported from Wiegand port is effective by the last four bytes

Wiegand 66: the EPC or TID data reported from Wiegand port is effective by the last eight bytes

Restore ex-factory default setting

In main UI, choose "configuration"➔ "restore ex-factory setting", pop up dialog box as per picture 4-17.



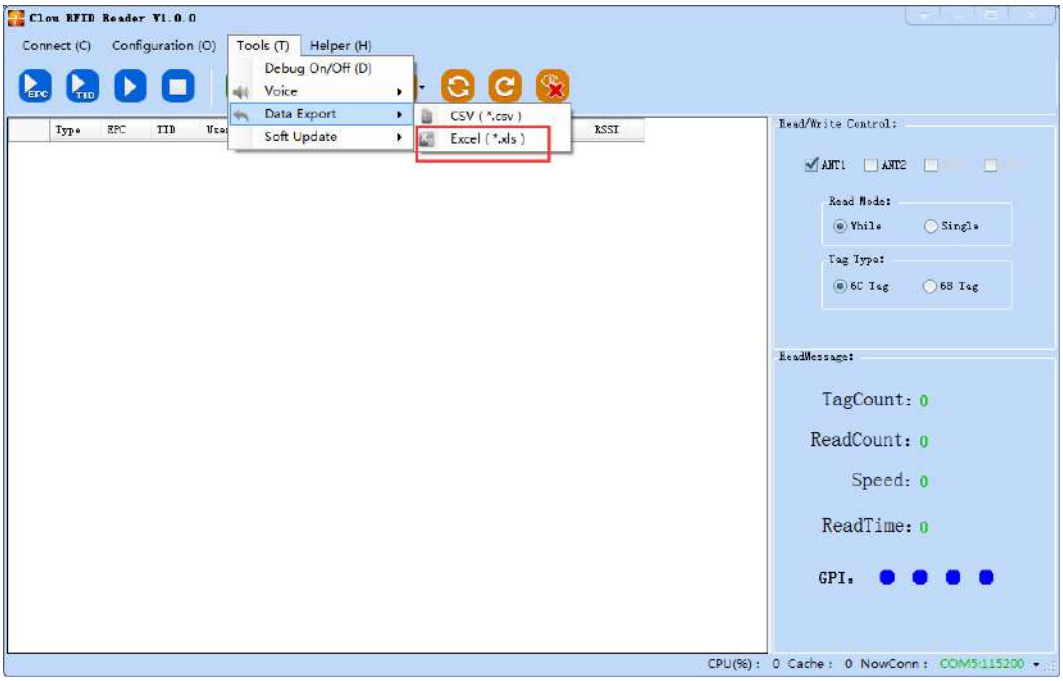
Picture 4-17 restore ex-factory setting

Whatever the reader is connected, when you click "restore ex-factory setting" button, all settings will be restored to ex-factory setting.

4.4.11 Tool

Data export

In main UI, choose "tool"→ "data export", the following dialog box pops up (picture 4-18), choose the format to be exported.



Picture 4-18 Data export

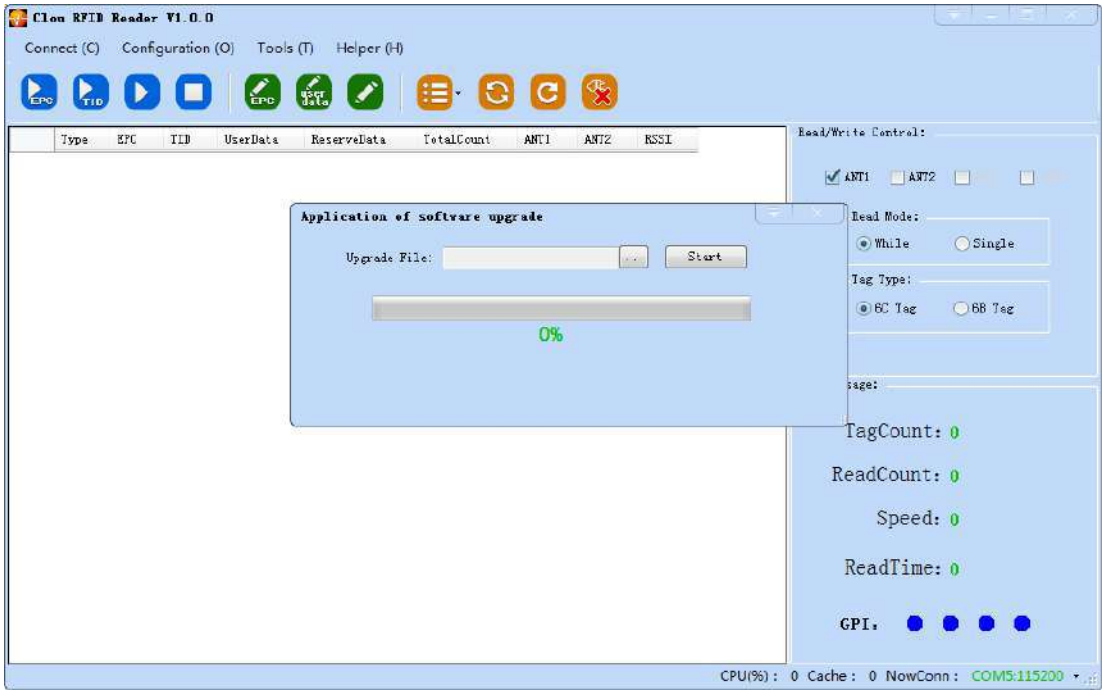
All data tag can be exported at format .csv or xls.

Software upgrade

The reader supports online upgrade. Software upgrade support Baseband Software Upgrade &

application software upgrade(system application software). Choose "Tool" → "software upgrade"→ "application software". Following dialog pops up (picture 4-19).

The reader supports online upgrade. Software upgrade support Baseband Software Upgrade & application software upgrade(system application software). Choose "Tool" → "software upgrade"→ "application software". Following dialog pops up (picture 4-20).



Pic 4-19 software upgrade

In the pull-down list of "upgrade file", find the route of .bin upgrade file, click "start upgrade", when the progress bar displays 100% finished, the upgrade is finished and successful. Following dialog pops up, click "confirm" for restart and enable it .

Pic 4-20　software upgrade successful

Baseband software upgrade process is same as above.

V, Common failure phenomenon

5.1 Daily maintenance

☆Check & ensure if the RF connector is fixed firmly

☆Check & ensure the screw that fixes reader & antenna is not loose.

☆Check & ensure the RF cable connection point skin is not peeling off.

☆Check & ensure if the power supply cable is connected well.

5.2 Common failure analysis & resolutions

☆Power supply abnormal

Check if the power supply is in normal status, if the AC power voltage is 100V~240V.

☆Serial port failed connection

Check if the serial port cable is connected stable or not.

Check if the serial port connection baud rate is correct.

Check if the serial port number is correct.

☆Network connection failure

The reader default IP address is: 192.168.1.116. Ensure PC IP address and reader IP address are in the same network, for example "192.168.1.XXX" can be connected with reader. If you forgot reader IP address, you can re-set it through RS232 to reader IP address.

☆Reader can not read tag.

- ■Check if antenna number is set correctly. If antenna is connected with 1# RF port, then please ensure to select 1# antenna in software interface.
- ■Check if tag is damaged. If can not get ID number, you can use another reader to read this tag to judge if this tag is damaged. If can not get data area, you need to check if the tag data area is lock. Tags which are locked should be un-locked before any operations.
- ■Check if tag is placed in effective reading range.
- ■check if there is EMI between readers or between reader & other device.

For the problems which can not be solved locally, please contact CLOU aftersales for repairing.

VI, Packaging, accessories, transportation & storage.

6.1 Packaging:

Pic 6-1 carton box size

Packaging carton box size: 350 mm×350 mm×190mm

6.2 Accessories

Pic 6-2 accessories list

No.	Name	Material code	Unit	Qty	Remarks
1	CL7206B6 reader	26052835000001	1	pcs	standard equipped
2	Power adapter 24V/2.5A	20109000000324	1	pcs	standard equipped
3	AC power cable	20350000000195	1	pcs	standard equipped
4	Installation bracket	20412000002647	1	pcs	standard equipped

6.3 Storage requirements

Long time storage should be made in following conditions:

Temperature：-40℃ ~ +85℃；Humidity：5% ~ 90%RH

VII. After-sale

Letter to Customers

Since our aim is to continuously improve our products for better user experience, we may modify the product characteristics, composition and design of circuits without given notifications. Thus the real product may be not in accordance with this manual. Generally, we will provide timely amendments to this manual. If it's not provided timely, please consult our service department.

Shenzhen Clou IOT Technologies Co., Ltd.

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Warranty Description: In order to offer users better service, our company provide warranty card with each device, please keep it to enjoy the service.

1, Products can replace free under conditions within one month after sale, in the precondition of normal operation without repairing.

2, Free maintenance won't be given under the following circumstance:

① The damage of the terminal caused by high voltage of the power grid.

② The damage caused by misuse or operated improperly.

③ The damage caused by excessive vibration when user delivering.

3, The software of this product can be upgraded freely, users can be training in our company for free.

4, Will be charge appropriately if the user don't have a warranty card.

5, Users will need to fill out the warranty card for repair service, and sent back to CLOU.