User manual
HYR830

Winnix Technologies Co., Limited

Product Introduction

- HYR830 adopts Impinj R2000 module, maximum power output is 30dBm.
- 4 RP TNC ports, with an 7dBi circular polarized antenna, reading distance can reach 10 meters.
- Reading speed is 400 tags/sec.
- 8 LED lights, real-time display working status.
- Many external ports, Including network interface, RS232、GPIO_IN*4、GPIO_OUT*4、RS485、wiegand、CAN、USB, can meet different client's requirement.
- Excellent read and write performance, it is suitable for complicated environment application, for example logistics, clothing, asset management etc.

The application of the reader

- Transportation management: road and railway transportation management and container transportation management and so on.
- motor vehicles management: use it to police station and transport department supervise and manage the motor vehicles
- Road and bridge charge: as the product is able to read the tag   data quickly in long distance, ,road rate and bridge can be charged without stopping. Vehicles.
- Customs management: the management for goods to pass and transit the customs and vehicles.
- Logistics and warehouse Management: Goods flow, warehouse management, and the flowing management of mail, parcel, luggage.
- Parking management: in order to make management and charge automation.
- Doors control management: including vehicles and people to pass in and out management.
- Craft work manufacture flow: supervise parts in the whole manufacture flow.

The Main Function

- More inventory modes: There are single inventory and multi inventory. Single inventory for simple application, and multi inventory for complicated environment, like warehouse management, logistic management.
- Filter function: user can only read or write the tag that they need, like EPC、TID、USR filter.
- Many management setting: manage the antenna working time, power setting

- User can read and write the tag, and also kill and lock the tag.

Technical Specifications

| S/N	Item	Parameters	Unit	Remark
1	Operating voltage	12	V	
2	Maximum Current	800	mA	
3	Standby current	≤100	mA	
4	Frequency range	840-960	MHz	Standard:902-928MHz,customized optional
5	Default operating frequency	Frequency hopping	MHz	Frequency interval 250KHz
6	Channel bandwidth	250	KHz	
7	Frequency hopping speed	≤2	s	
8	Maximum power output	30	dBm	
9	Step interval	1	dB	5~30dBm adjustable by software
10	Label protocol	EPC C1G2 /ISO18000-6C		
11	Radio-frequency power rising time	≤500	μs	
12	Radio-frequency power dropping time	≤500	μs	
13	Adjacent channel power leaking ratio	≤-40	dB	±1CH
		≤-60	dB	±2CH
14	Frequency stabilizing ratio	±10	ppm	-25℃～+40℃
		±20	ppm	-40℃～+60℃
15	Maximum reading range	10	m	7dBi Antenna
16	Multi-Label	>400/s		

Appearance and structure

- Size(L*W*H)：190×145×30mm
- Weight：300g

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Picture1 Front view

External Interface
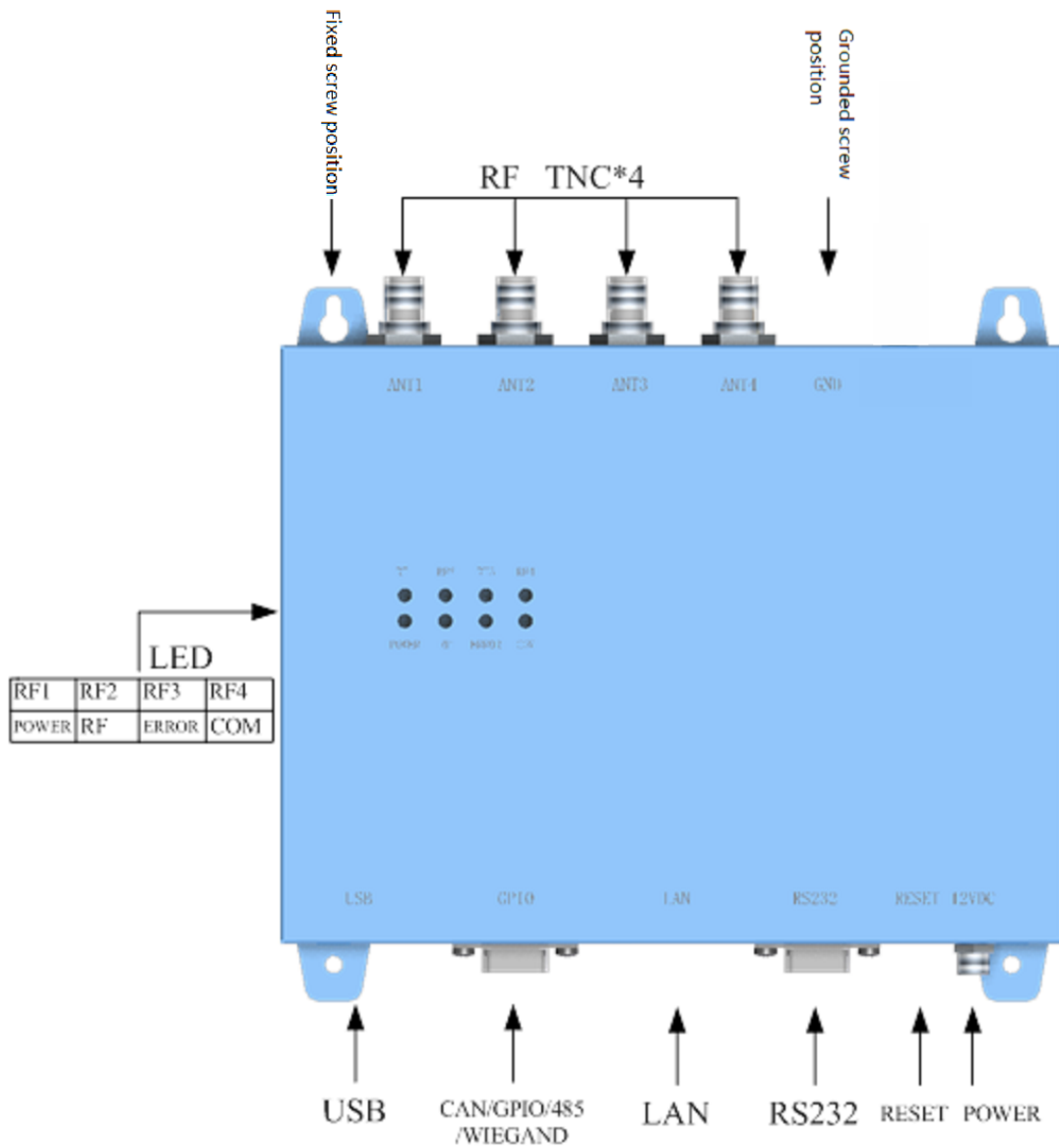
DB15 Interface definition

S/N	Item	Technical data	Unit	Remark
Pin	Signal name	Signal direction	Function/compatibility description	
1	GPIO2	Output		Optical isolation
2	GPIO3	Output		Optical isolation
3	GPIO8	Input		Optical isolation
4	GPIO6	Input		Optical isolation
5	WIEGAND1	Output	WIEGAND	
6	485A	Bidirection	RS485	
7	GPIO1	Output		Optical isolation
8	GPIO4	Output		Optical isolation
9	GPIO5	Input		Optical isolation
10	WIEGAND0	Output	WIEGAND port	
11	485B	Bidirection	RS485	
12	GPIO7	Output		Optical isolation
13	CANH	Bidirection	CAN port	
14	CANL	Bidirection	CAN port	
15	GND			

Environment requirement

S/N	Item	Parameters	Unit	Remark
1	Working temperature	-20～+70	℃	
2	Storage temperature	-40～+85	℃	
3	Relative humidity	5%～95%	RH	Non-Condensing

Demo User Guide

The Demo software user manual is used for HYM730/HYM740/HYM750 serial modules and HYR810/HYR820/HYR830 series readers;

Support Chinese and English language;

Support RJ45 connecting. Adopt TCP long connection method, slave computer as TCP server, host computer demo software as the TCP client side. (Notice: RJ45 connecting only for HYR830 reader)

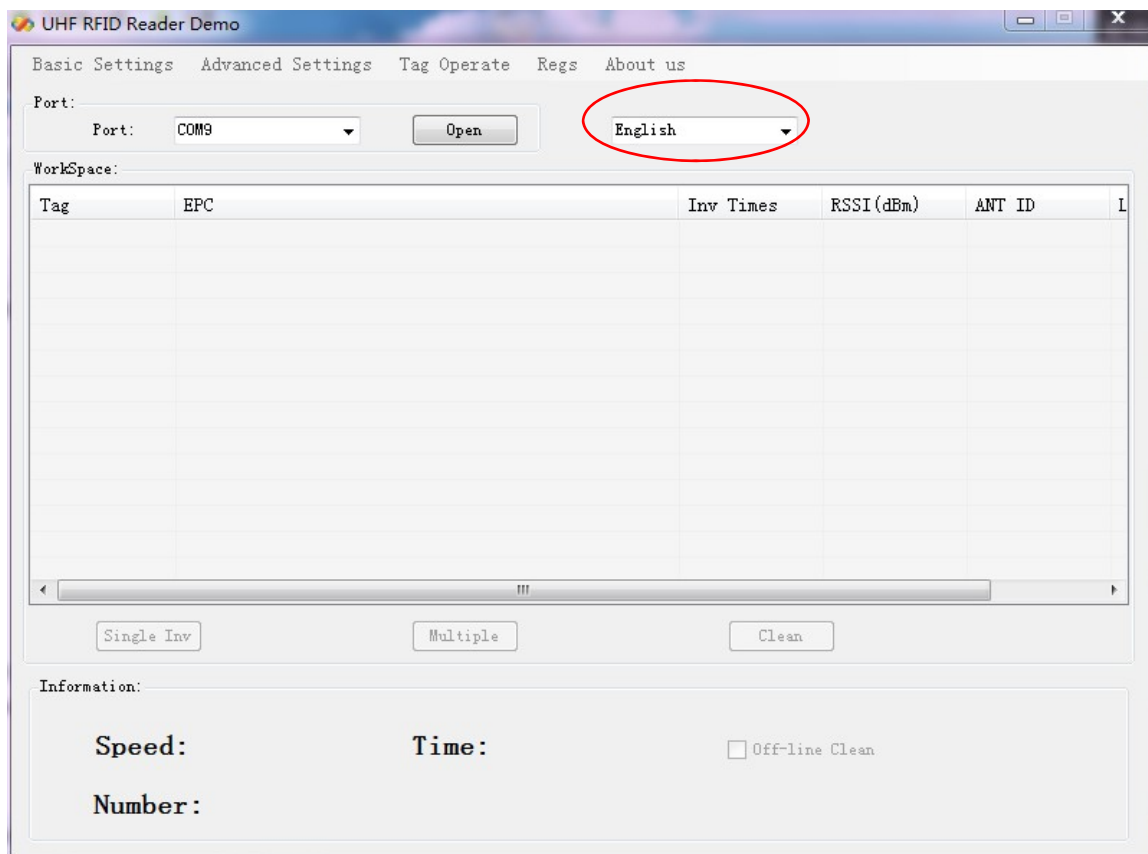Support RS232 connecting, baud rate 115200, 1 bit for start, 1 bit for stop, 8 bits for data.

1. Language

Two optional languages are supported:

Simply Chinese

English

Open the DEMO software, as picture 1, click red marked area, could choose language.

Picture 1 Opening interface

2. Connection

Demo software support two optional connecting, Ethernet and RS232 serial connections.

2.1 Ethernet connection setting

Default IP address of the reader is 192.168.1.10. If connecting in Ethernet (RJ45), please set IP address of PC at same range, such as 192.168.1.100. Before connecting, make sure IP address of PC could be passed at Ping operation.

Connections are displayed with different prefix. If connecting with RJ45, type 'NET'+'IP' at the drop-down box of port.
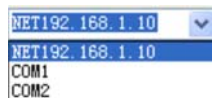
For example, connect to 192.168.1.10, type 'NET192.168.1.10' as below picture.
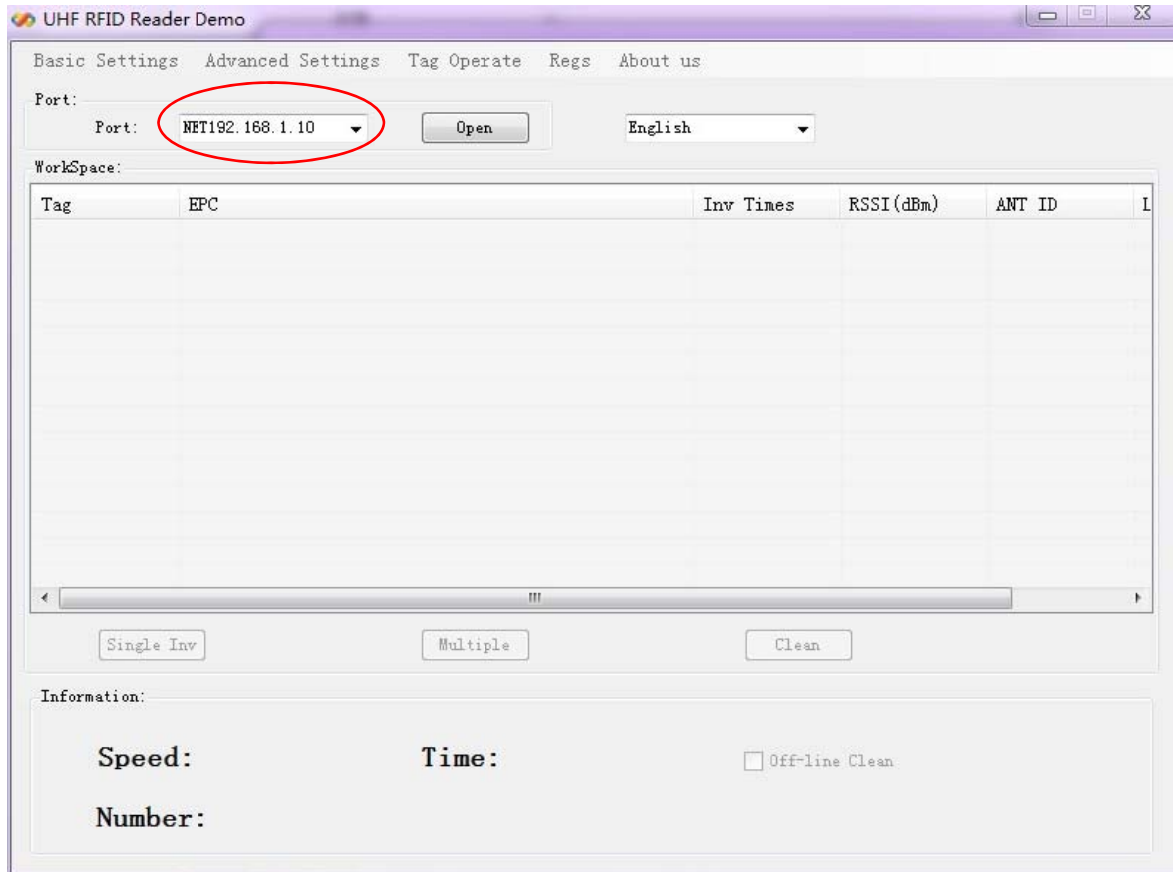
Picture 2 Ethernet port connection

2.2 RS232 connection

Demo software could automatically display usable COM ports, click drop-down box, you will see below.

Picture 3 Automatic identify serial port

RS232 connection is with a prefix of 'COM', which user don't need to input. What users have to do is to choose correct COM number, and then it should be connected, as below picture.
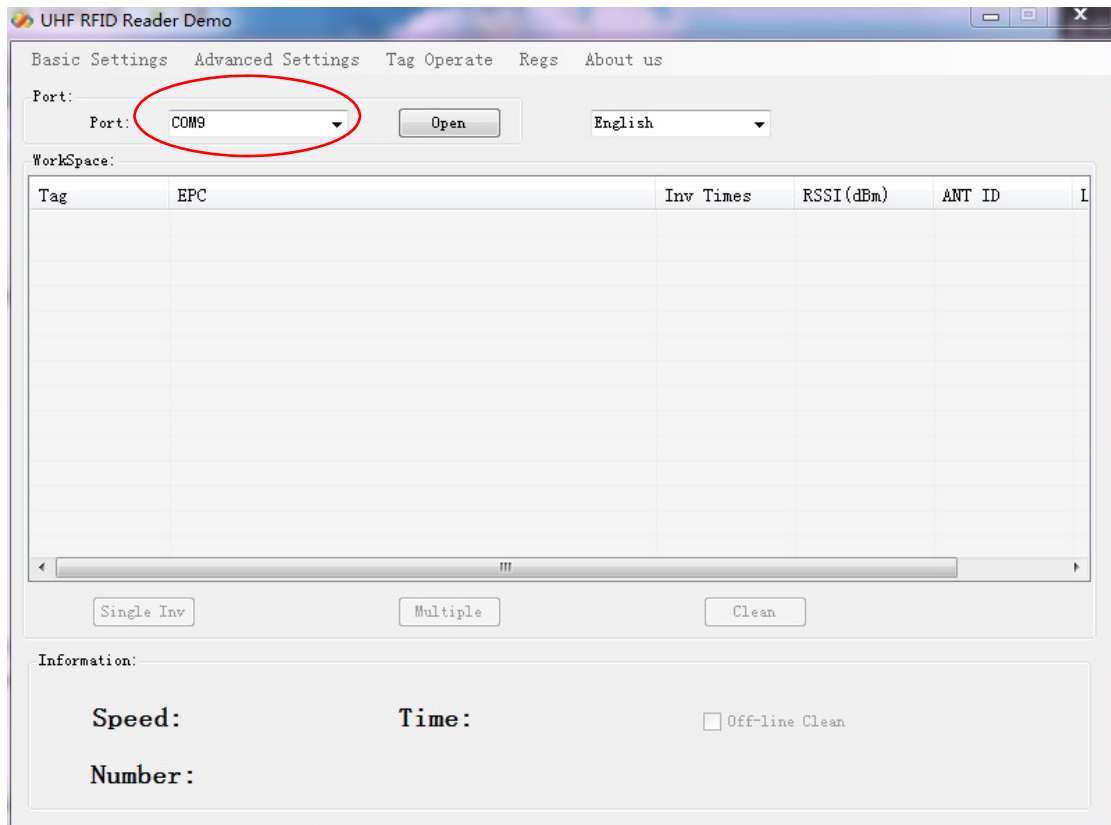
Picture 4 RS232 port connection

3. Single inventory operation

Single inventory operation is in 'singe ask' and 'single answer' method of reading. Each inventory will result an acknowledgement frame. In each single inventory, only one tag's EPC data could be gotten.

Single inventory mode supports to inventory tag function at any length EPC code. At workspace area, it could display EPC code, Inventory times, RSSI for each tag, as below picture.
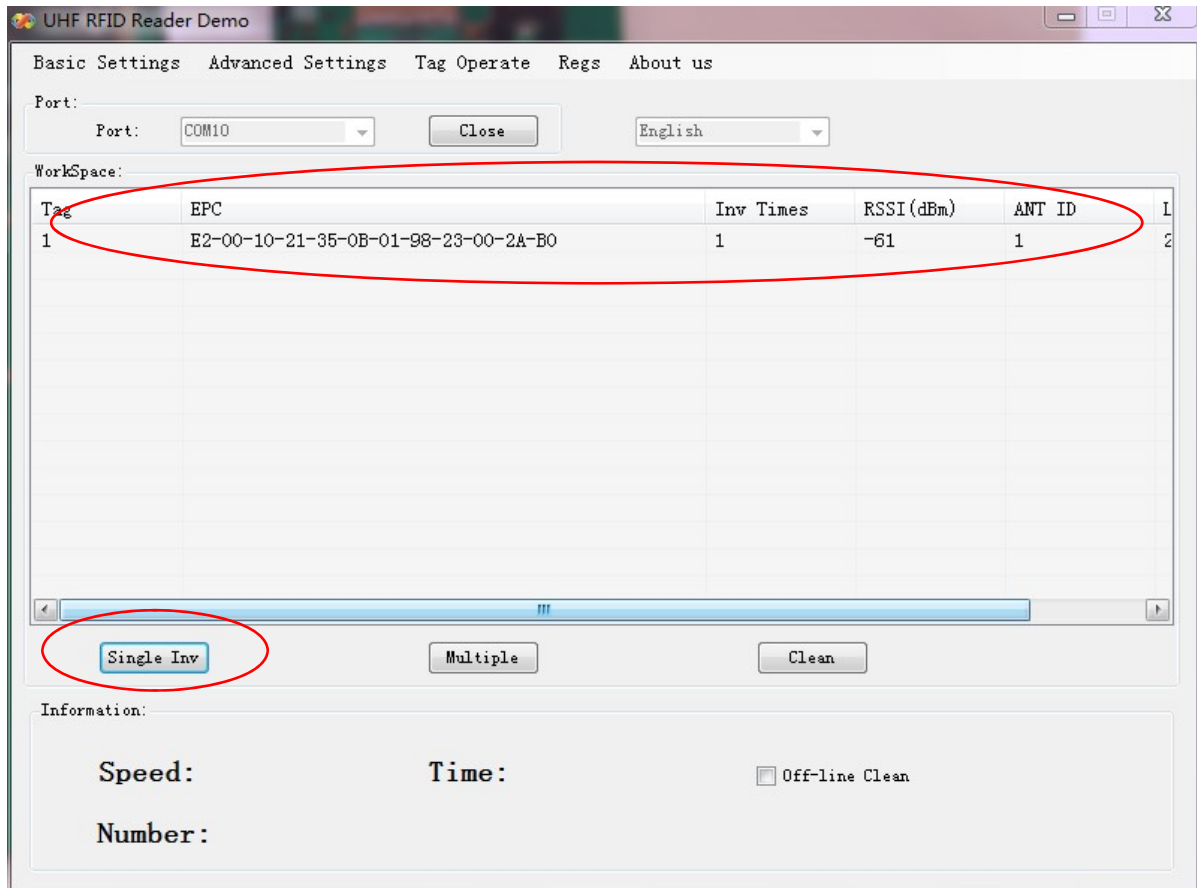
Picture 5 Single inventory mode

4. Multiple inventory operation

Below picture is for multiple inventory mode. Inventory times are non-limited. At information area, it will display Inventory speed, time and tag numbers. Click 'off-line clean', it will launch the function. If a tag is not read in 4 seconds, the marked color of the tag will turn grey, if over 8 seconds, the tag will be cleared from workspace.
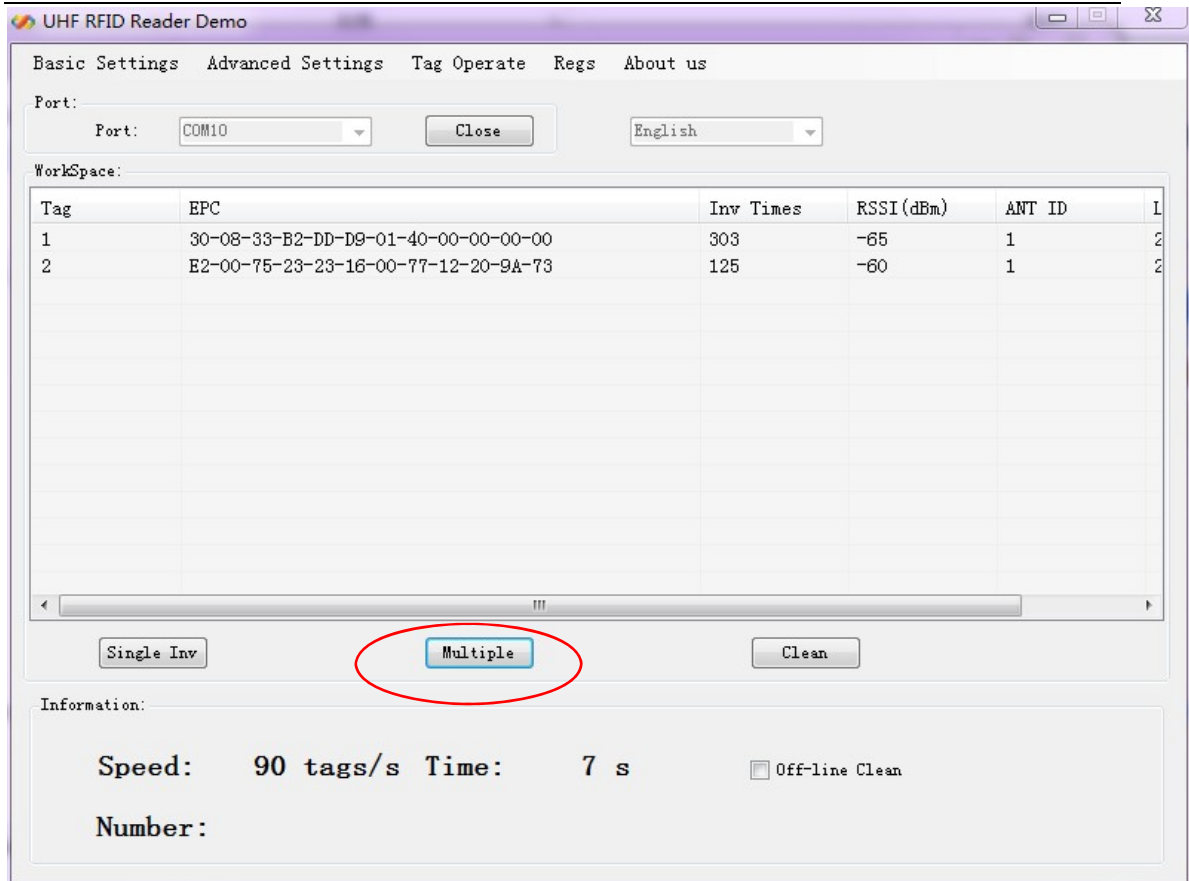
Picture 6 Multiple inventory mode

5. RF output power setting

TX power setting is in basic settings section, below picture is for TX power setting.
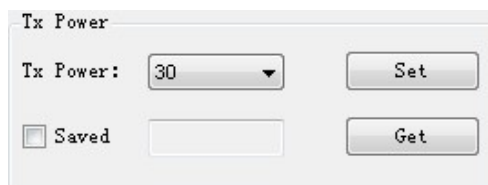
Picture 7 RF output power setting

The TX power range is 5-30dBm, with 1dBm stepping up. 'Set' the picked power, and then 'get' for checking the result.

Choose "save", the setting will be kept after power off.

6. Region setting

Region setting is in basic settings section, as below picture.

Picture 8 Region setting

Region setting includes

China1 area (840.625MHz~844.375MHz),

China2 area (920.625MHz~924.375MHz),

Europe area (865.7MHz~867.5 MHz),

USA area (902MHz~928MHz),

Korea and Japan area.

Choose the frequency band at your area, and then click 'set', 'get' is to check the current band you have chosen.

Choose "save", the setting will be kept after power off.

7. Frequency hopping setting

Frequency hopping setting is in basic settings as below picture.

Picture 9 Frequency hopping setting

Click 'get', you will see the each hopping points of the frequencies.

Fixed frequency setting: fill in the frequency at the blank then click 'add', then click 'set', if successful, it will notice. Click 'get' can check out the set value.

Self-defining frequency hopping setting: input one frequency point, click 'add'; then input another, click 'add'. Repeat till you add all frequency points, then click 'set'. You can click 'get' to check if setting successfully.
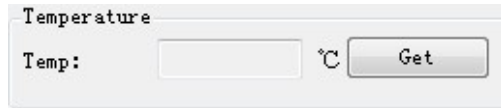
8. Version info

Version information is displayed in basic settings as below picture.

Picture 10 Version information

Click 'get', you will get the version information, including Software version, Hardware version, Firmware version and Module ID.

9. Temperature info

Temperature info is displayed in basic settings as below picture.

Picture 11 Temperature information

Click 'get' to see the working temperature information. For normally, the temperature range is between -40 – 85 degree Celsius.

When the "temperature protect" is activated (the default is turn on), once the temperature is over 65℃, the rate of inventory would fell by 50%; If the temperature is over 85℃, the reader-module would stop working automatically, and it would back to work again only the temperature below 85℃.

More than 80℃ on the life of the module will have a certain impact.

10. Recommended link setting

Link setting is in basic settings as below picture.
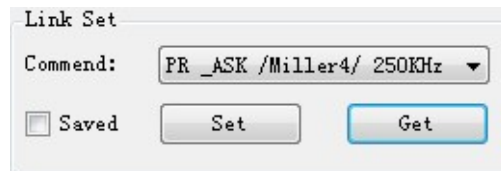
Picture 12 Recommended link setting

Recommended Link Settings:

- DSB_ASK /FM0/40KHz
- PR_ASK/Miller 4/250KHz
- PR_ASK/Miller 4/300KHz
- DSB_ASK /FM0/400KHz

Default Link setting is PR_ASK/Miller 4/250KHz.

Choose 'save', the setting will be kept after power off.

11. Antenna setting

Antenna setting is in Basic Setting as below picture.


Picture 13 Antenna setting

ANT2, ANT3, ANT4 are not applied for single port module. For four channels module and reader, you can set the working time for each antenna.

The antennas are working as time sharing.

NOTE: This device requires controlled installation location by professional installers.

12. Multiple inventory Delay time setting

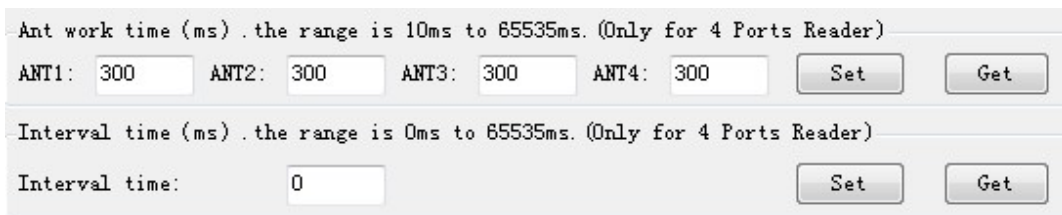Multiple inventory delay time setting is in Basic Setting, as below picture.
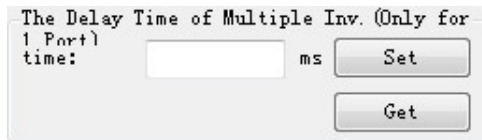
Picture 14 Multiple inventory Delay time setting

The setting is for module waiting time after one inventory cycle during the multiple inventory working. This is only applied for single port module. Default value is 0 during multiple inventory. At such case, the module will be working at full load, while the module temperature will be higher.

13. Antenna working and interval time setting

Antenna working and interval time setting is in Basic Setting, as below picture.

Picture 15 Antenna working and interval time setting

The setting is for each antenna working time and interval time during multiple inventory. Before the setting, you should choose the antenna number.

For instance, if want to set ANT1 of working time 300ms, ANT2 of working time 350ms, ANT3 of working time 300ms, ANT4 of working time 500ms, and waiting 1000ms for once reading cycle, see following steps:
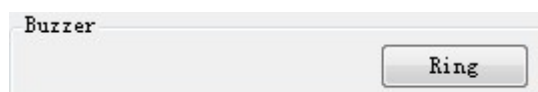
a) Click ANT1, ANT2, ANT3, ANT4, and 'set';

b) Set ANT1 of working time 300ms, ANT2 of working time 350ms, ANT3 of working time 300ms, ANT4 of working time 500ms, and interval time is 1000ms.
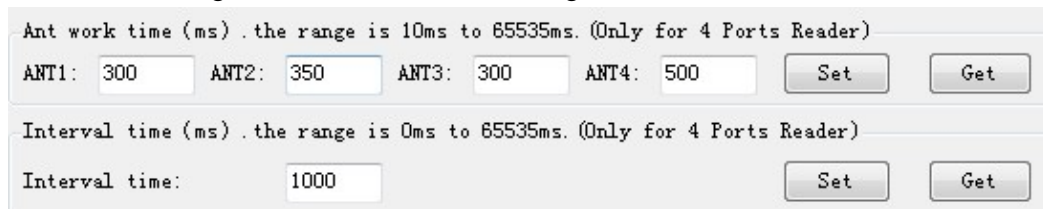
14. Buzzer setting

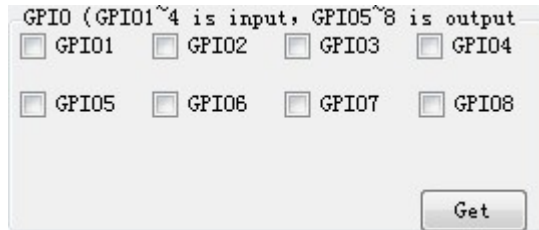Buzzer setting is in Basic Setting as below picture.

Picture 16 Buzzer setting

Notice: The function is only for HYR830 reader.

Click 'Ring', you will hear the alarm from the reader.

15. GPIO setting

GPIO setting is in Basic Setting as below picture.

Picture 17 GPIO setting

Notice: HYM series modules only have 3 output IO ports (GPIO1, GPIO2 and GPIO3). HYM830 reader has 4 output IO ports (GPIO1, GPIO2, GPIO3, GPIO4), and 4 input IO ports (GPIO5, GPIO6, GPIO7, GPIO8)

The picked output IO ports will output high level, otherwise will output low level. If connecting input IO ports at high level, click 'get', you will see the picked IO ports; while at low level, the IO ports are not picked.

16. CW setting

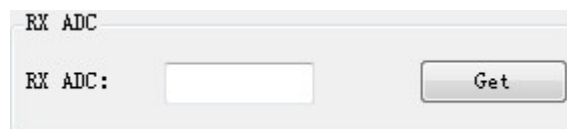CW setting is in advanced settings as below picture.

Picture 18 CW setting

Click 'ON' to open single carrier wave transmit, 'OFF' is to close single carrier wave transmit. 'Test-CW' is for testing, please ignore it.

17. RX ADC info

RX ADC information is displayed in advanced settings as below picture.

Picture 19 RX ADC information

RX ADC is very important for checking the matching and connection of the antenna with module or reader. If the data is above 10, there may be connection problem or no-matching. At the time, please re-check the connection of antenna, or remove it, otherwise it will damage the module or reader. If the data is below 10, the antenna can be worked.

18. Q setting

In Advanced Settings, below is the picture of Q setting.

Picture 20 Q setting

There are two ways of dynamic Q and static Q. Dynamic Q is recommended, as it could automatically adjust the Q value to achieve most fast inventory.

19. Single inventory timeout setting

In Advanced Settings section, below is the picture for single inventory timeout setting

Picture 21 Single inventory timeout setting

This function is only for single inventory. If single read is unsuccessful, after the overtime, the reader will report the result. If the reading is successful during the overtime, the response will be appeared immediately.

20. Select and Query Setting

In Advanced Settings section, below is the picture for Select and Query parameter setting

Picture 22 Select and Query setting

Please read detail instruction for Select and Query command in ISO18000-6C protocol.

21. Tag reading and writing setting

In Tag Operate section, below is the picture for tag reading/writing setting

Picture 23 Tag reading and writing setting

Memory Bank is data area of the tag, which includes RFU, EPC, TID and USR.RFU is for password zone of the tag, including Access Password (AccPwd) and Kill Password (Killpwd). EPC is the ID number of the tag, usually at 12 bytes. TID is the worldwide sole ID code, and includes the information of tag IC company. USR is data zone for users, for some kind of tag there is no the USR data zone.

Start address is for the beginning address of data reading and writing. Unit is word (One work equals to 2 bytes).

Length is to show the length of data write. Unit is word (One work equals to 2 bytes).

Access password: this is only for the reading and writing on those locked tag. Notice that you can read EPC information of the tag even the tag has been locked, but have to access the password for writing. TID is only for read, can't for write.

Read/Write setting is usually operated with filter operation, which means you can read/write those picked EPC tag, and avoid to reading/writing un-picked tags. Steps are as following:

Find the tag on 'workspace' which you want to reading and writing, **double-click** the EPC number, enter 'tag operate' interface, then you can operate.

22. Tag Lock setting

In Tag Operate section, below is the picture for Tag Lock setting.

Picture 24 Tag lock setting

At RFU zone, KillPwd and AccPwd could set separately.

There are four kinds of operation for lock setting in each zone, including Unlock, Normal lock, Permanent lock, Permanent Unlock, and usually for Lock and normal lock operations.
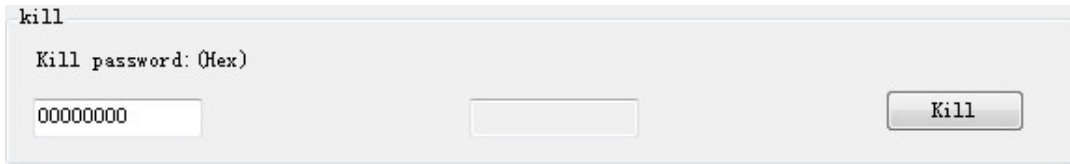
Tag lock setting is usually operated with filter operation, which means you can lock those picked EPC tags, and avoid locking un-picked tags. Steps are as following:

Find the tag on 'Workspace' which you want to lock, double-click the EPC number,

enter 'tag operate' interface, then you can operate.

23. Tag Kill setting

In Tag Operate section, below is the picture for Tag Kill setting.

Picture 25 Tag kill setting

It is supported by ISO18000-6C protocol the reader could kill the tags permanently. Please caution the killed tag could not be usable.

Tag Kill setting is usually operated with filter operation, which means you can kill the picked EPC tags, and avoid killing un-picked tags. Steps are as following:

Find the tag on 'Workspace' which you want to kill, double-click the EPC number, enter 'tag operate' interface, then you can operate.

24. FastID Function
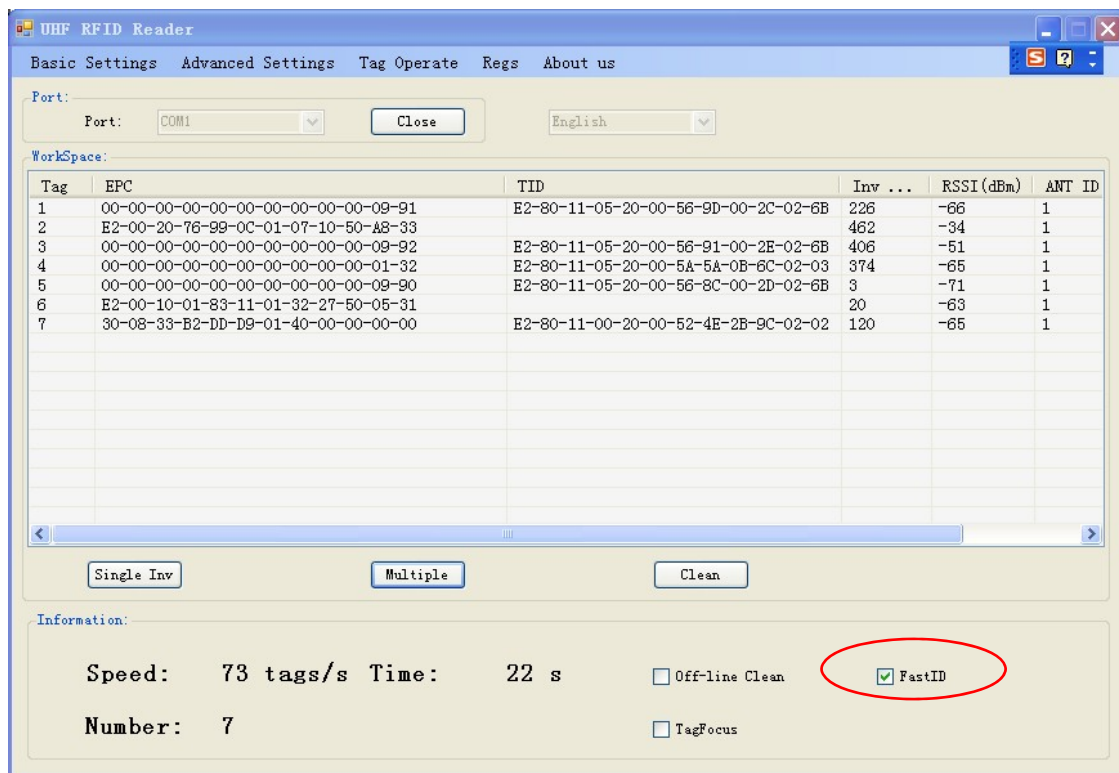
Picture26 FastID Operation screen

Click"FastID"then you can start FastID function

When you open "FastID", on single inventory and continuous inventory, the EPC and TID of the tag will be shown together.

Attention, only if the tag support FastID function, then you can use this function, if the tag didn't support this function, you only can get EPC.

25. TagFocus Function
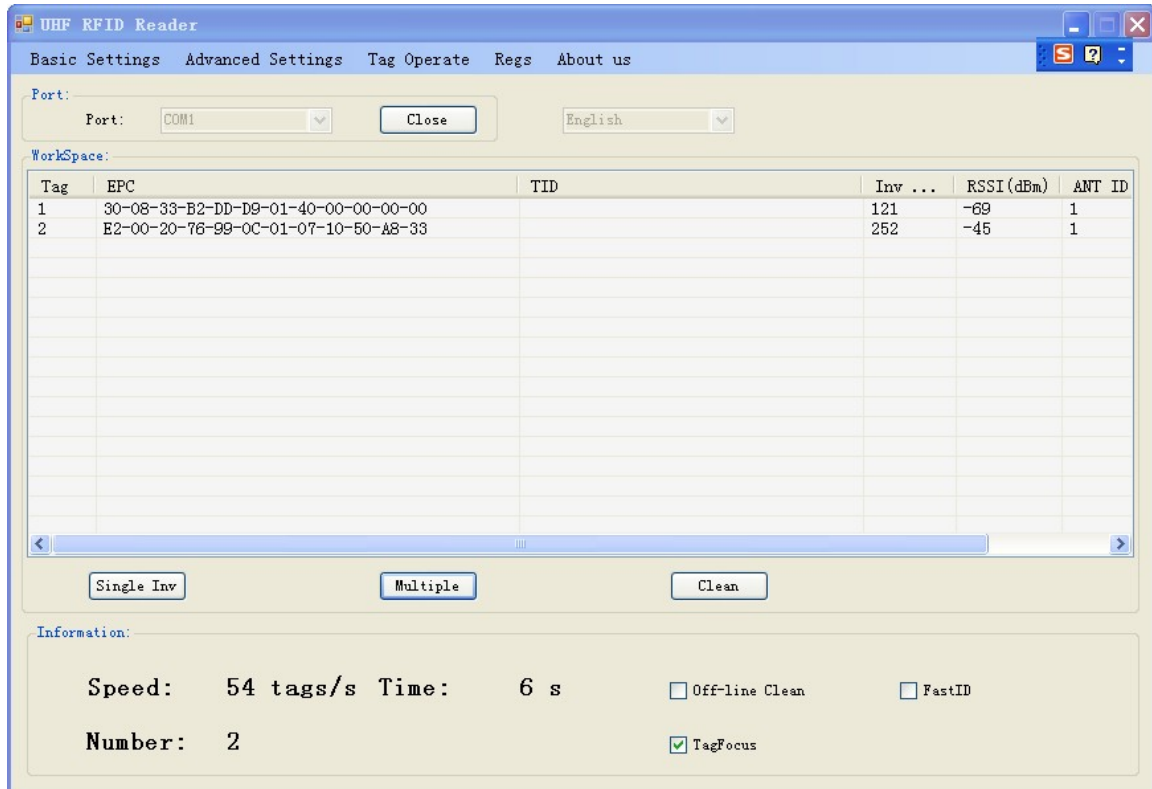
Picture27 TagFocus Operation screen

Click "TagFocus",then you can start TagFocus function

FCC Caution

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment 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 equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 25cm between the radiator& your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.