MR17
Fixed UHF Reader
User's Manual

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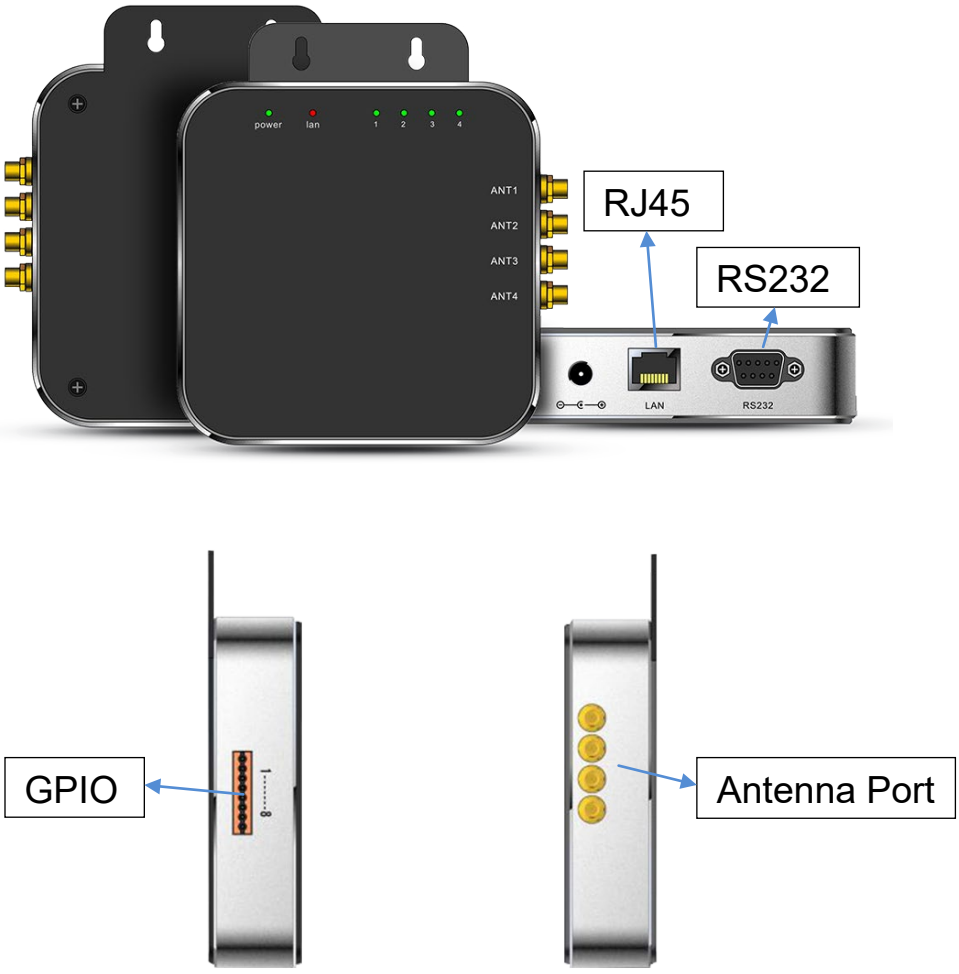
Chapter 1 Product Intro

1.1 Intro

MR17 is a high-performance four-channel fixed UHF reader. The core chip adopts Impinj R2000 module with high integration and excellent performance. With Stable and reliable capacity, excellent anti-electromagnetic interference capability and heat dissipation performance, it meets the requirements for installation and application of various indoor and outdoor environments and can be applied in multiple industries with strict RFID application standard such as warehouse management, archives and library management, bank, clothing and footwear retail, jewelry monitoring, watch industry, laundry, production line management, medical instrument cabinet and vending machines.

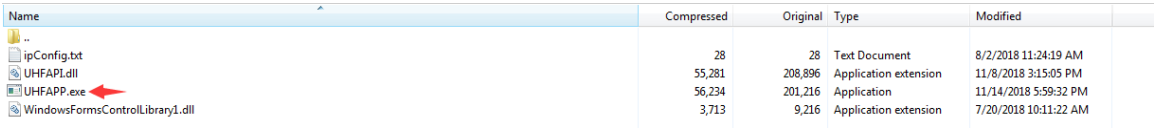
1.2 Interface

MR17 has adopted DC 12V/5A power supply, it can be equipped with multiple types of antennas with different output power such as 6dBi, 9dBi and 12dBi.Also MR17 has adopted SMA female port, RS232 and RJ45 interfaces, Windows SDK and demo are provided.



1.3 Accessory List

1. MR17 fixed reader, 12V/5A power adaptor.
2. UHF antennas: 6dBi, 9dBi, 12dBi etc.
3. Feeder line that has adopted with SMA male port, the port on other side needs to be equipped with antenna.
4. RJ45 Ethernet cable.
5. Serial port cable.
6. Demo software, it includes 4 necessary files and UHFAPP.exe is execute program as pic. 1.

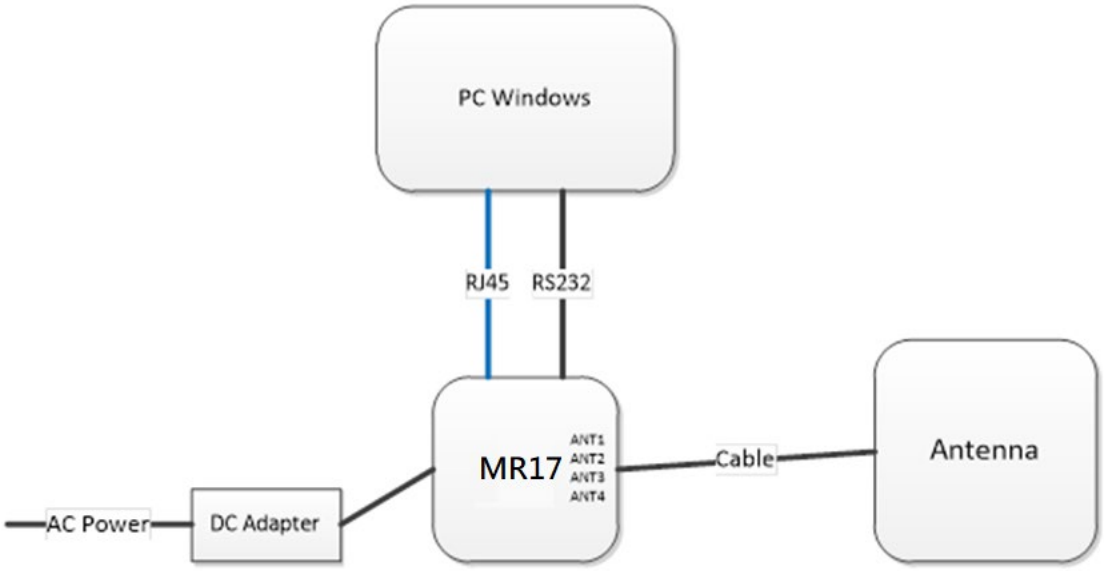


Pic.1

1.4 Device installation

MR17 can be connected as Pic.2. PC can connect with device by serial port cable (communication velocity is 115200bps). Also it can be connected by Ethernet cable through RJ45 port. (Default IP address of MR17 is 192.168.99.202, Port is 8888).

PC needs to be set with MR17 in same network segment and PC could connect with multiple MR17 devices through switchboard or similar. One MR17 can be connected with 4 antennas at maximum.



Pic.2

1.5 GPIO

1	2	3	4	5	6	7	8
NC	NC	output：Relay pin 1	output：Relay pin 2	input：Optically coupled 1 LED+	input：Optically coupled 1 LED-	input：Optically coupled 2 LED+	input：Optically coupled 2 LED-

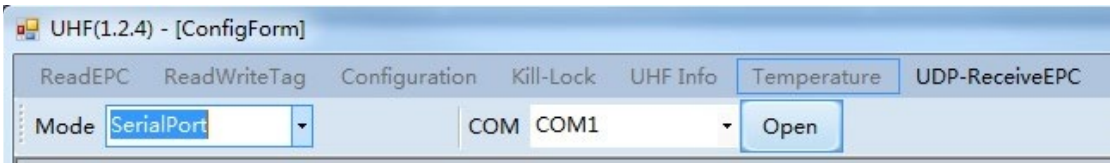
MR17contains a GPIO interface, which is defined as follows：

1、IO1-2：NC，unable to connect to any electrical level；
2、IO3-4：Controllable by software, maximum switching voltage of electric relay is 220Vdc，250Vac；
3、IO5：Optically coupled 1 inputLED+,voltage range between IO5 and IO6is 3-5.5V,maximum current is 50mA；
4、IO6：Optically coupled 1 inputLED-,voltage range between IO5 and IO6is 3-5.5V, maximum current is 50mA；
5、IO7：Optically coupled 2 inputLED+, voltage range between IO7 and IO8is 3-5.5V, maximum current is 50mA；
6、IO8：Optically coupled 2 inputLED-, voltage range between IO7 and IO8is 3-5.5V, maximum current is 50mA；

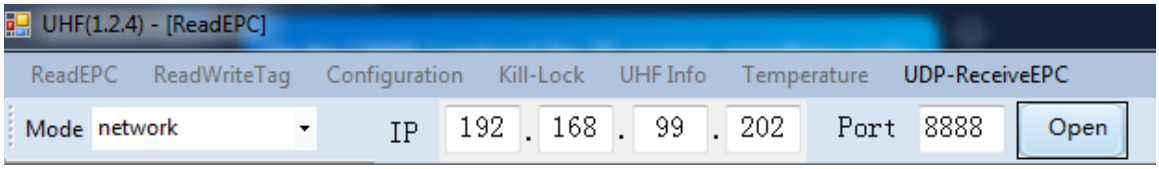
Chapter 2 Installation instructions

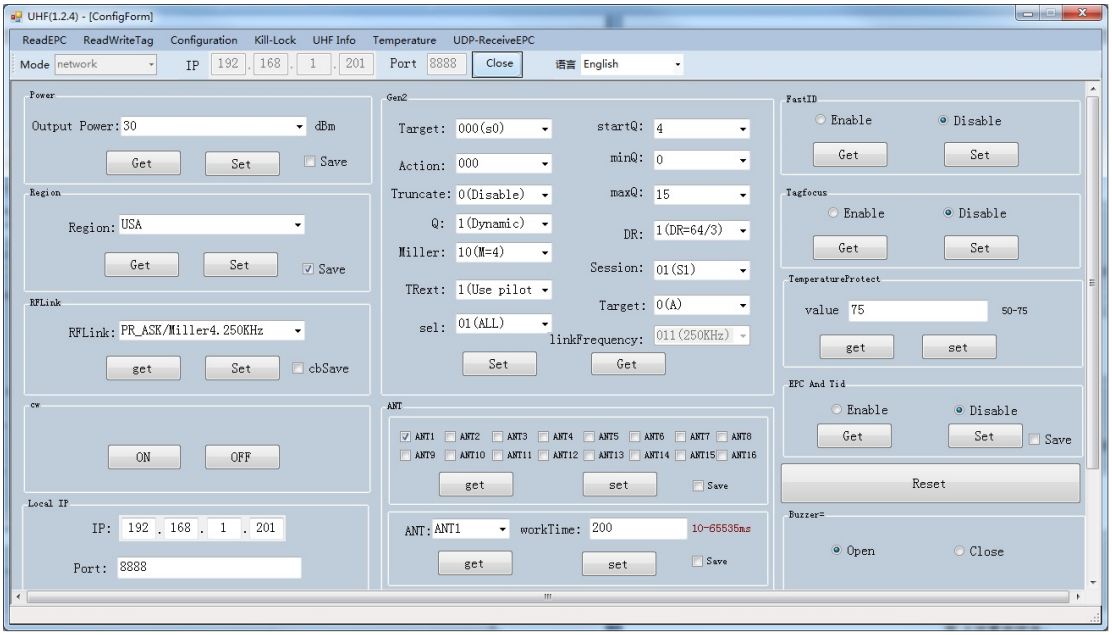
2.1 Parameter Setup

Double click UHFAPP.exe to enter software, and connect with device through serial port line. Select **Mode** to "SerialPort", select COM to according serial port on PC. Click "Open" to connect with device, initiation page is as follows:



If RJ45 has been used as connection, communication **Mode** needs to be selected as "network" and input IP address and port number (default IP address is 192.168.99.202, Port is 8888.) Then click "Open" to connect PC and device. After PC and device have been connected, the status page is as follows:

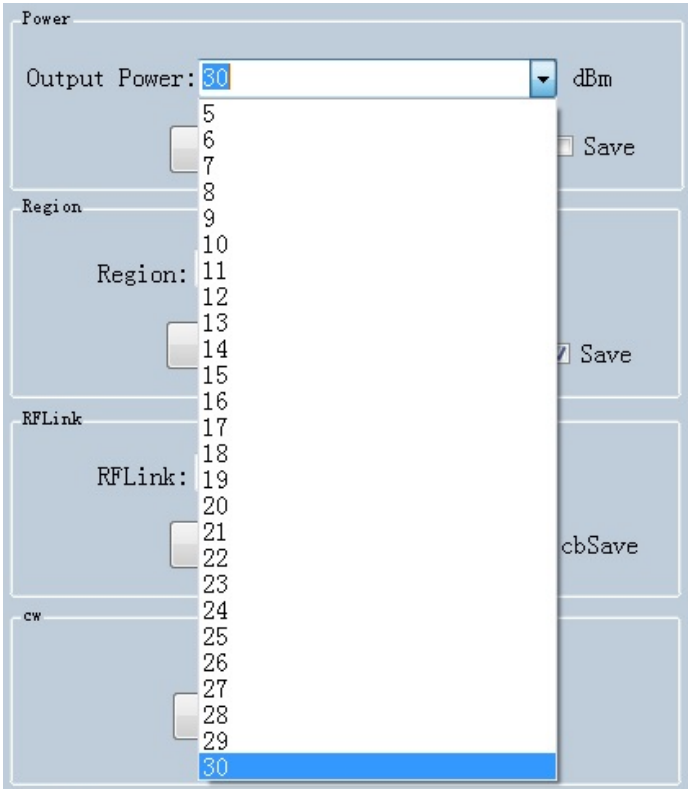



UHF(1.2.4) - [ConfigForm]
ReadEPC
ReadWriteTag
Configuration
Kill-Lock
UHF Info
Temperature
UDP-ReceiveEPC
Mode
network
IP
192 . 168 . 1 . 201
Port
8888
Close
语言
English
Power
Output Power:
30
dBm
Get
Set
Save
Region
Region:
USA
Get
Set
Save
RFLink
RFLink:
PR_ASK/Miller4.250KHz
get
Set
cbSave
cw
ON
OFF
Local IP
IP:
192 . 168 . 1 . 201
Port:
8888
Gen2
Target:
000(s0)
Action:
000
Truncate:
0(Disable)
Q:
1(Dynamic)
Miller:
10(M=4)
TRext:
1(Use pilot
sel:
01(ALL)
Set
startQ:
4
minQ:
0
maxQ:
15
DR:
1(DR=64/3)
Session:
01(S1)
Target:
0(A)
linkFrequency:
011(250KHz)
Get
ANT
ANT1
ANT2
ANT3
ANT4
ANT5
ANT6
ANT7
ANT8
ANT9
ANT10
ANT11
ANT12
ANT13
ANT14
ANT15
ANT16
get
set
Save
ANT:
ANT1
workTime:
200
10-65535ms
get
set
Save
FastID
Enable
Disable
Get
Set
Tagfocus
Enable
Disable
Get
Set
TemperatureProtect
value
75
50-75
get
set
EPC And Tid
Enable
Disable
Get
Set
Save
Reset
Buzzer
Open
Close

After device has connected with PC, the parameters on interface will be empty. Click "Get" on each option to collect device parameters.

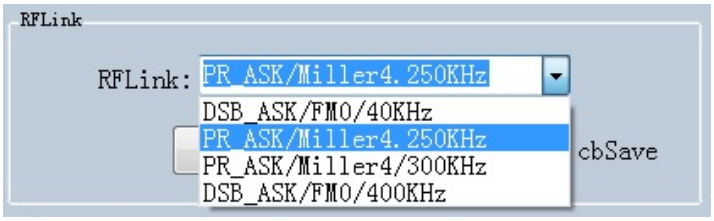
Click "Set" on the page, user can adjust necessary parameters, some parameters are default values.

Output power can be set in range of 5 dBm to 30 dBm as following picture, after select value, click "Set" button. If "Save" has been selected, current parameters will be saved after power off device.

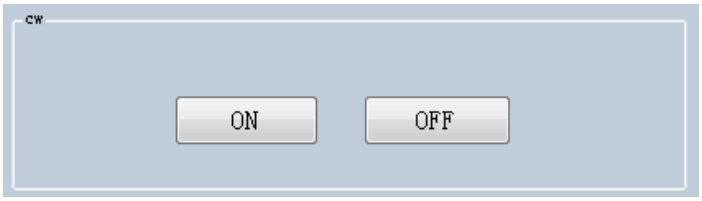


Set regions:

Set RFLink:



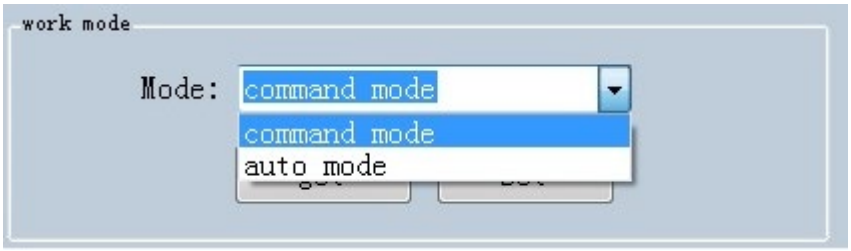
Set continuous wave:



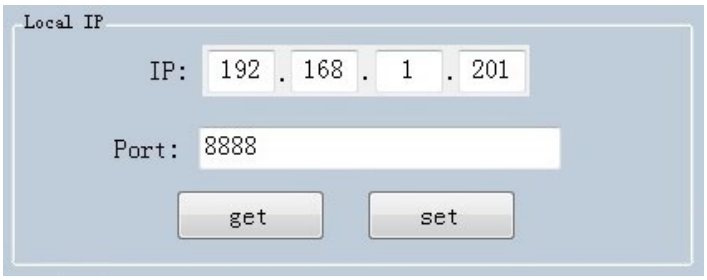
There are two work modes can be selected, "command mode" and "auto mode".

Under "command mode", user could collect tag data in "Read EPC" page, click "Start" to send command to device on PC, click "Stop" to stop collecting tag data.

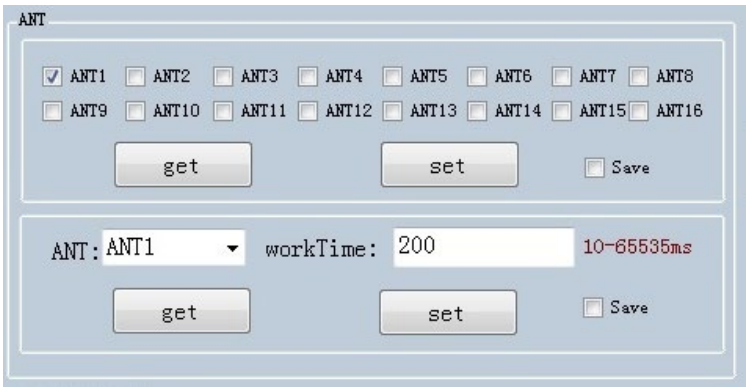
Under "auto mode", user could collect tag data in "UDP-ReceiveEPC" page, click "Start" to receive data, click "Stop" to stop receiving data. After selecting "auto mode", the device needs to be restarted.



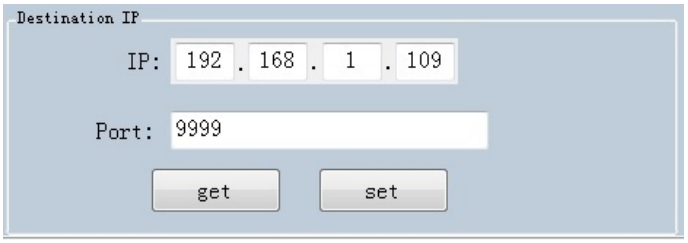
Set IP address and make sure PC and device have used in same segment. For example, if IP address of PC is 192.168.1.109, mask is 255.255.255.0, the device IP address can be set to 192.168.1.201, port number doesn't need to be changed.



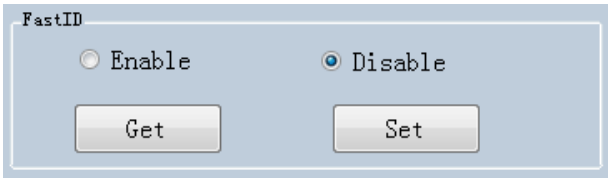
Set antenna connection, there are 4 I/O ports on device and have been marked as ANT1, ANT2, ANT3, ANT4. User needs to select antenna which has been connected and click "set".



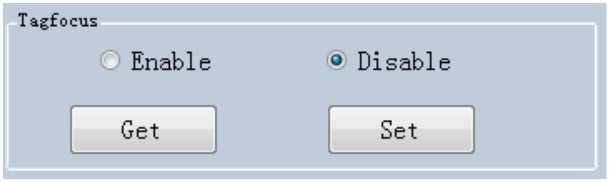
Set destination IP address and port number, destination IP address is the IP address which used for reading tag data under "auto mode".



Set FastID:



Set TagFocus:



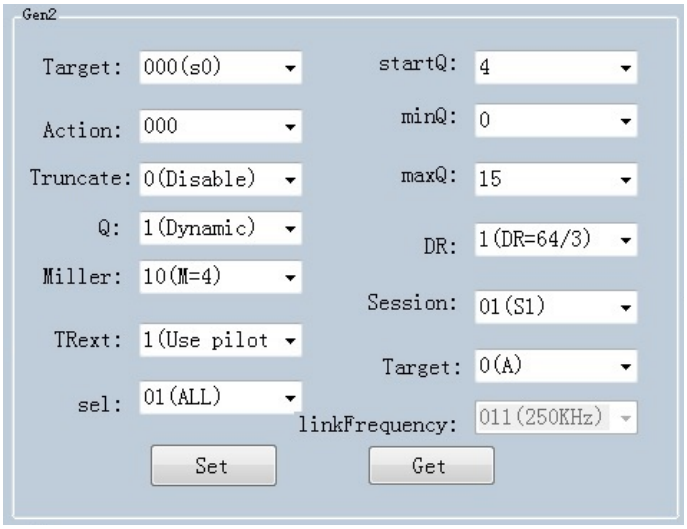
Set protective temp. It means to setup highest operating temperature of UHF module:

Set EPC and TID:

Reset, click "Reset" button to restore device to default value. After reset, user needs to click "Close" and "Open" to reconnect the device.

Set Buzzer, click "Open" to switch on buzzer function, device will play notification sound when reading tags.

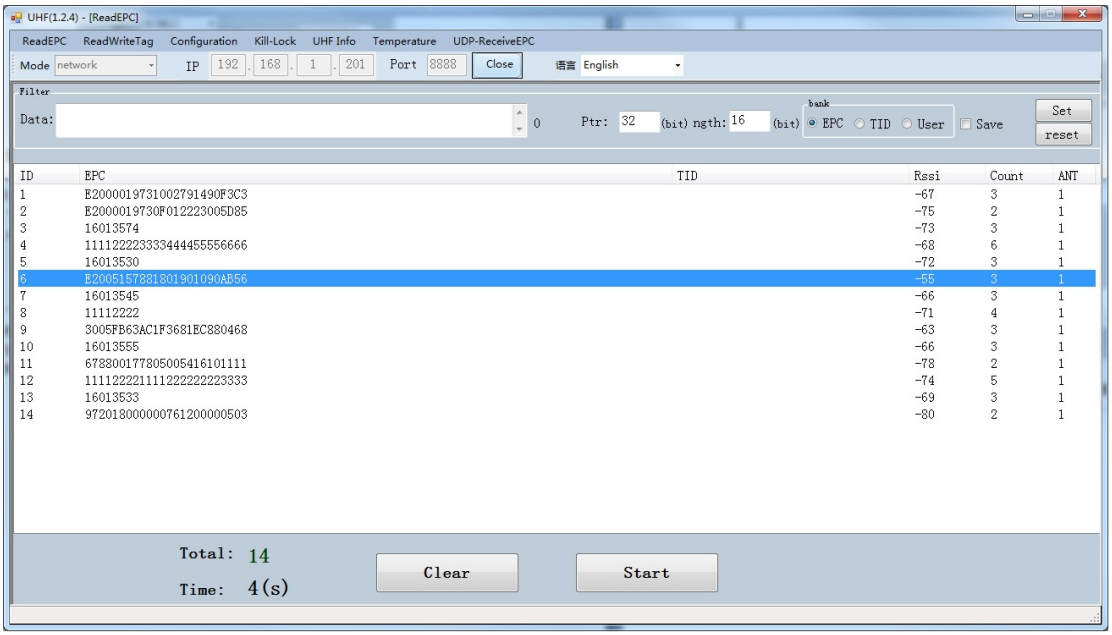
Set Gen2, this parameter needs to be adjusted by actual requirements.



Chapter 3 Read and Write EPC

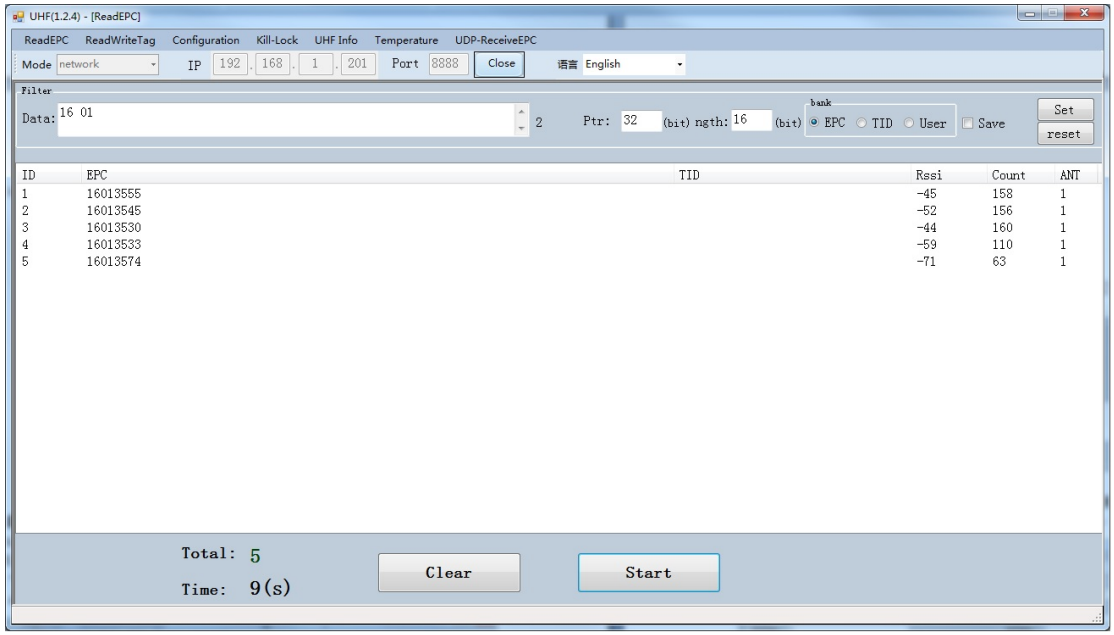
3.1 Read EPC

Click "ReadEPC" in menu to enter EPC page, click "Start" to read tags, click "Stop" to stop reading. The EPC, RSSI, Count number and ANT number (antenna channel)will be recorded in window as following pic:



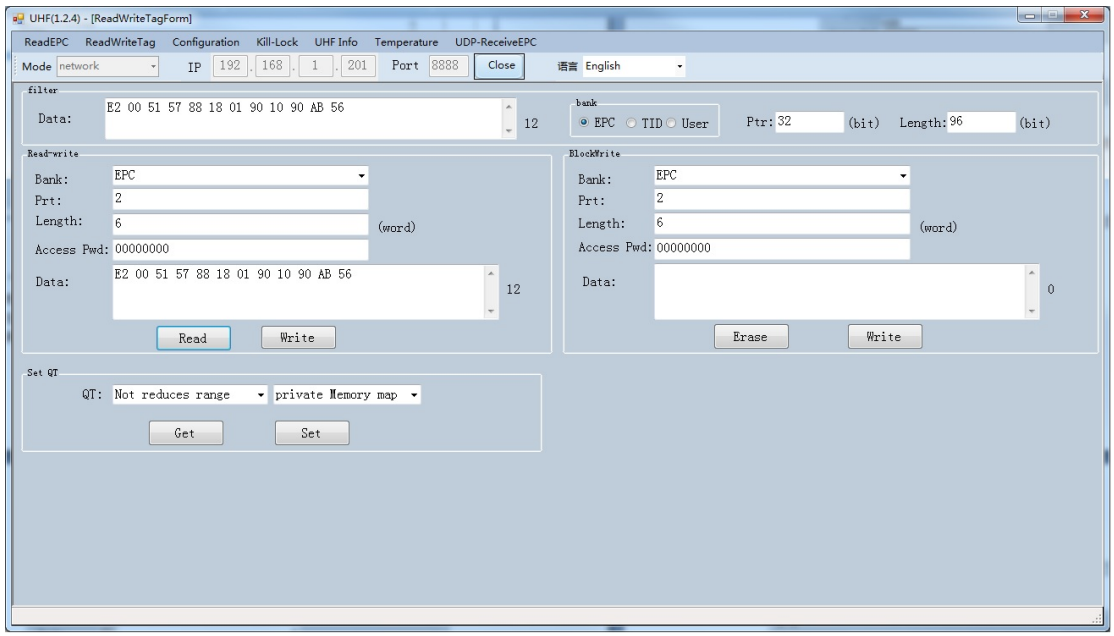
User could enter data in "Filter" to filter EPC of special tags, the maximum filter DL is 96 bits. User needs to setup data, initial address, data length and click "Set". After filtered data has been set, the device will read and search for the tag which has been filtered.

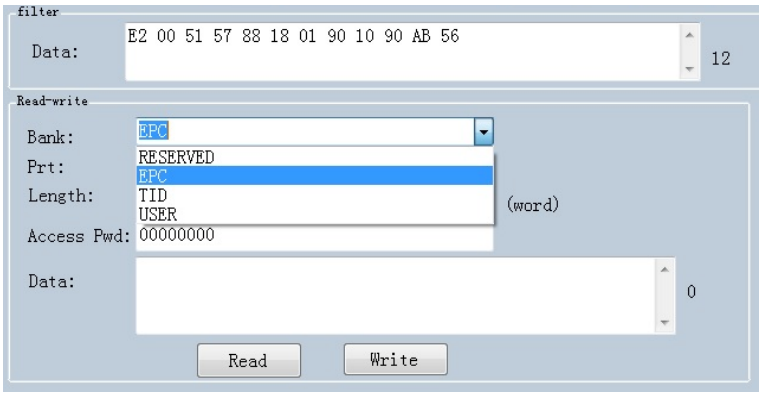
For example: enter 16 01 in "Data", initial address data length is 32(bit), length is 16(bit), select EPC in "bank", click "Set" and click "Start" to start scanning tags which the address start at 16 01:



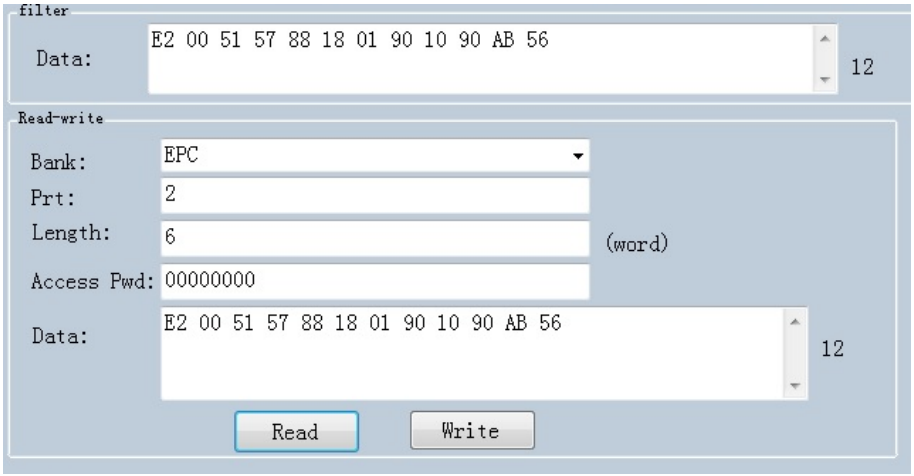
3.2 Read & Write Tags

Click "ReadWriteTag" to enter its page, TID area can be read only, RESERVED, EPC and USER areas can be read and written.

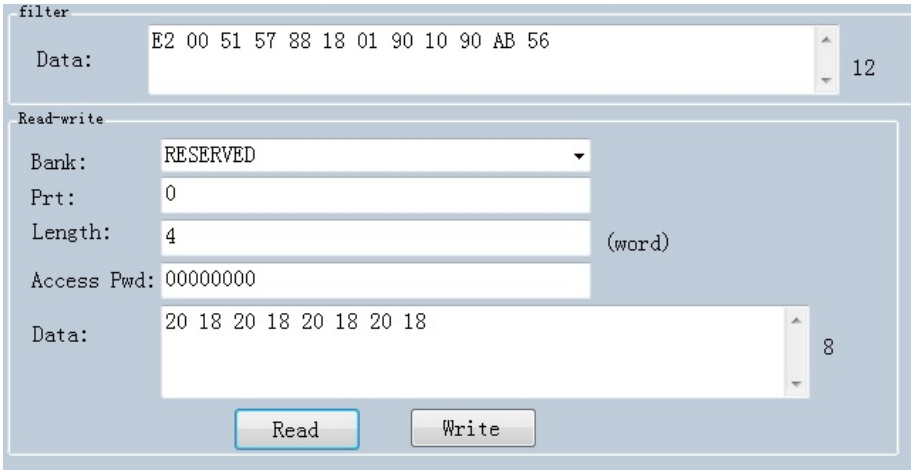




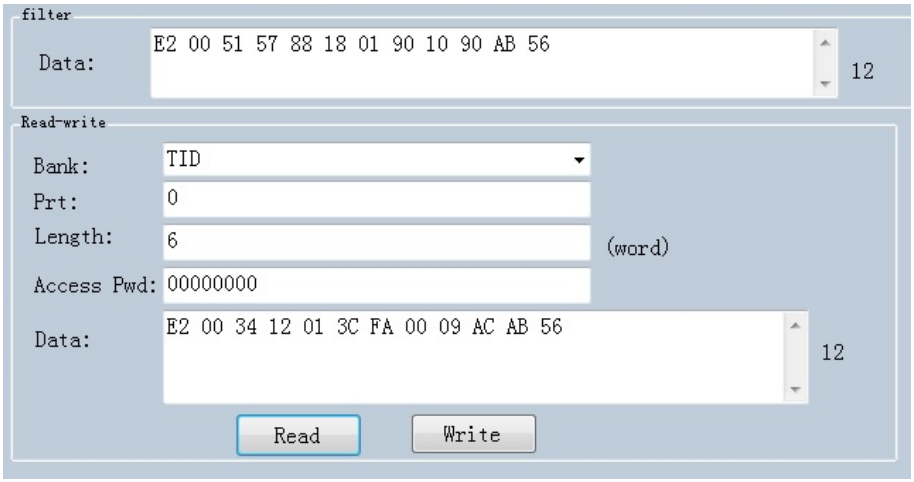
Click one option in "Read-write" window to enter tag reading mode, EPC will be automatically copied into "Data" block in filter, default option is EPC reading, click "Read" to read 12 bytes of EPC area.



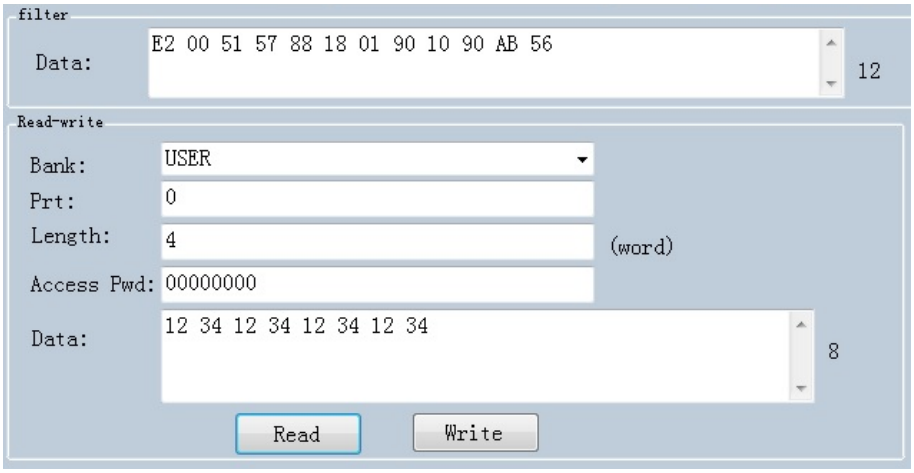
For "RESERVED" area, user could read 4 words at maximum, previous 2 words are password of KILL function, last 2 words are access passwords:



Read TID area:



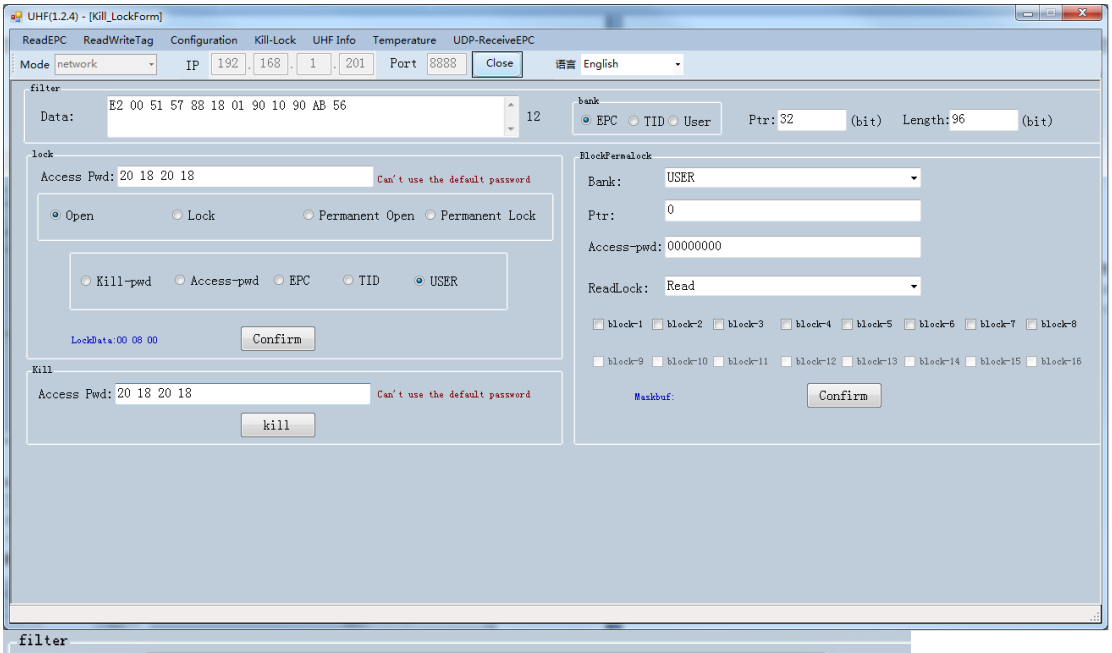
Read USER area:

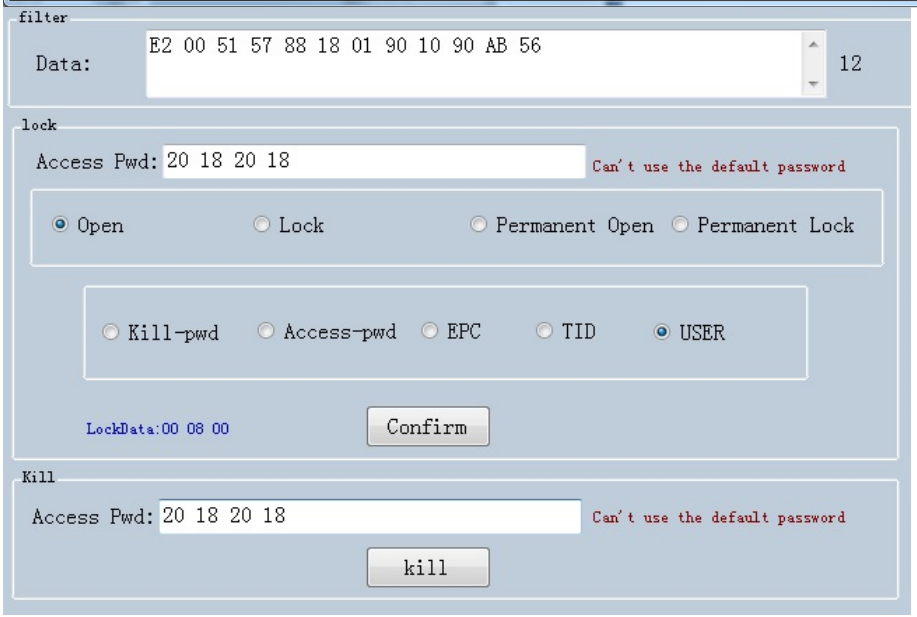


Data could be written in EPC, RESERVED and USER areas, select according areas and input initial address, length, input data into "Data" window and click "Write" to write data into according areas.

3.3 Lock UHF Tag

Click "Kill-Lock" in main menu to enter Tag locking function. For this function, user could execute "Lock", "Kill", "Open", "Permanent Open" and "Permanent Lock", to execute "Lock" function, password is needed. If user wants to kill UHF tag, need to enter password and tag will be wasted permanently.

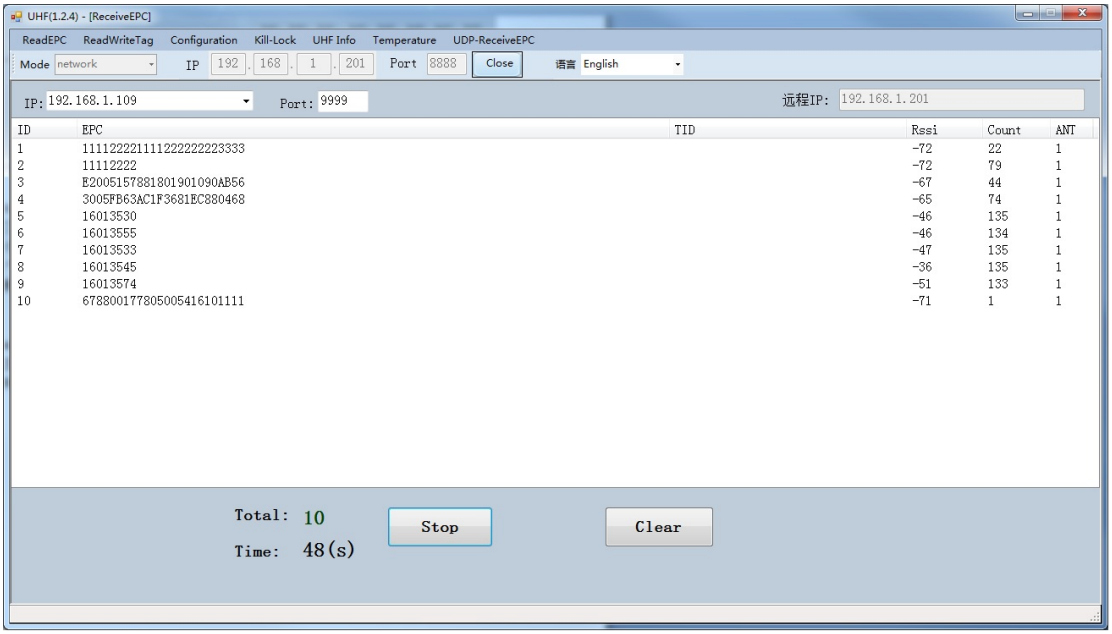




3.4 UDP-ReceiveEPC

After auto mode has been selected, restart device and select UDP-ReceiveEPC, click "Open" to connect device and select IP address of PC in address column, click "Stop" to stop receiving UHF tag data.

If user needs to escape auto work mode, "command mode" needs to be selected in work mode.



3.5 Others

Click "UHF information" in main menu to read hardware version and firmware version, click "Temperature" to read current temperature value of UHF module.