

SHENZHEN CHAINWAY INFORMATION TECHNOLOGY CO., LTD

Fixed UHF Reader

UR4 User Manual



Statement

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Chapter 1 Product Intro

1.1 Intro

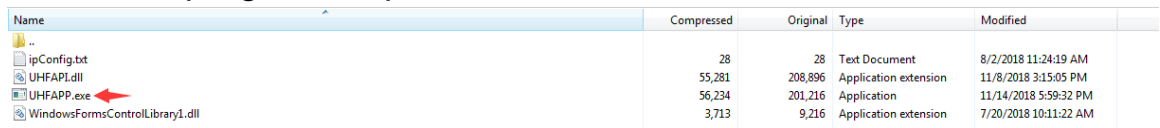
Chainway UR4 is a high-performance four-channel fixed UHF reader. The core chip adopts Impinj R2000 module with high integration and excellent performance. With Stable and reliable capacity, excellent anti-electromagnetic interference capability and heat dissipation performance, it meets the requirements 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 Brief

UR4 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 UR4 has adopted SMA female port, RS232 and RJ45 interfaces, Windows SDK and demo are provided.

1.3 Device List

1. UR4 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.



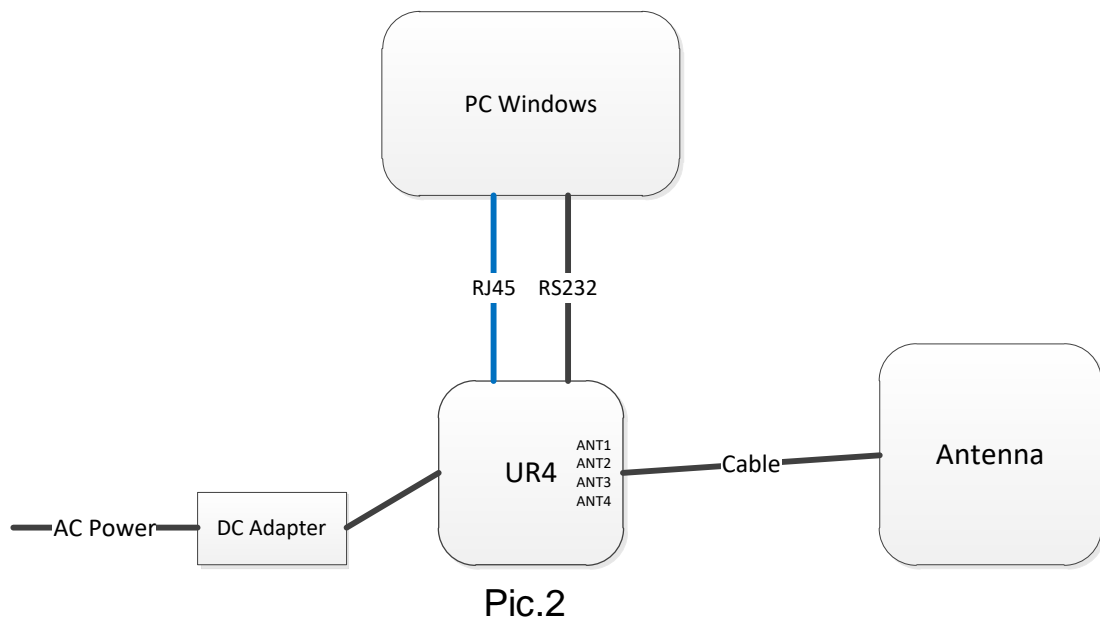
Name	Compressed	Original	Type	Modified
..				
ipConfig.txt	28	28	Text Document	8/2/2018 11:24:19 AM
UHFAPL.dll	55,281	208,896	Application extension	11/8/2018 3:15:05 PM
UHFAPP.exe	56,234	201,216	Application	11/14/2018 5:59:32 PM
WindowsFormsControlLibrary1.dll	3,713	9,216	Application extension	7/20/2018 10:11:22 AM

Pic.1

1.4 Device installation

UR4 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 UR4 is 192.168.99.202, Port is 8888).

PC needs to be set with UR4 in same network segment and PC could connect with multiple UR4 devices through switchboard or similar. One UR4 can be connected with 4 antennas at maximum.



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-

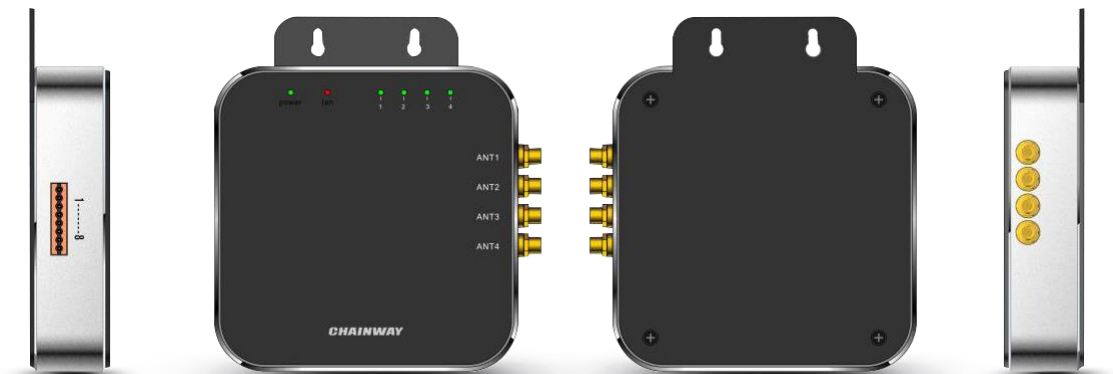
UR4 contains a GPIO interface, which is defined as follows:

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 input LED+, voltage range between IO5 and IO6 is 3-5.5V, maximum current is 50mA;
- 4、IO6: Optically coupled 1 input LED-, voltage range between IO5 and IO6 is 3-5.5V, maximum current is 50mA;
- 5、IO7: Optically coupled 2 input LED+, voltage range between IO7 and IO8 is 3-5.5V, maximum current is 50mA;
- 6、IO8: Optically coupled 2 input LED-, voltage range between IO7 and IO8 is 3-5.5V, maximum current is 50mA;

Chapter 2 Installation instructions

2.1 Appearance

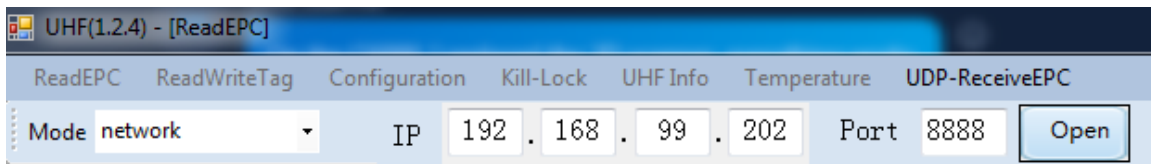


2.2 Parameter Setup

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

ON OFF

Local IP
IP: 192.168.1.201
Port: 8888

Gen2
Target: 000(s0) startQ: 4
Action: 000 minQ: 0
Truncate: 0(Disable) maxQ: 15
Q: 1(Dynamic) DR: 1(DR=64/3)
Miller: 10(M=4) Session: 01(S1)
TRext: 1(Use pilot) Target: 0(A)
sel: 01(ALL) linkfrequency: 011(250KHz)
Set 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.

Power

Output Power: 30 dBm

5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

Save

Region

Region: Set Save

RFLink

RFLink: Set Save

cbSave

cw

Set regions:

Region

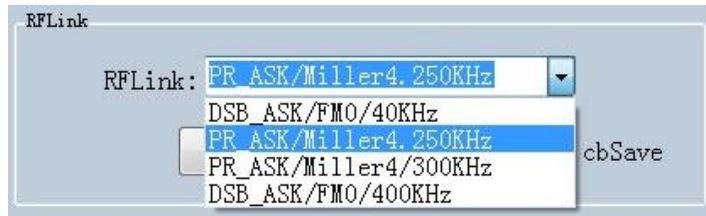
Region: USA

China1
China2
Europe
USA
Korea
Japan

Save

RFLink

Set RFLink:



Set continuous wave:



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

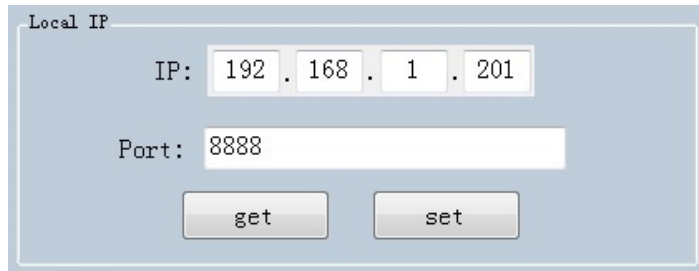
Under "command mode", user could collect tag data in "Read EPC" page, click "Start" to send command to device on PC, click "Stop" to stop collecting tag data.

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.



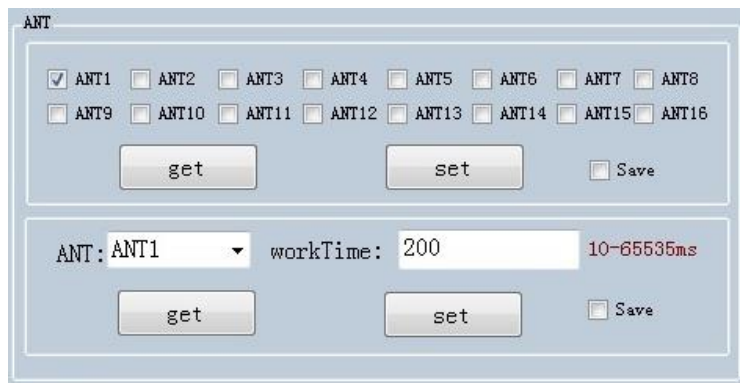
Local IP

IP: 192 . 168 . 1 . 201

Port: 8888

get set

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".



ANT

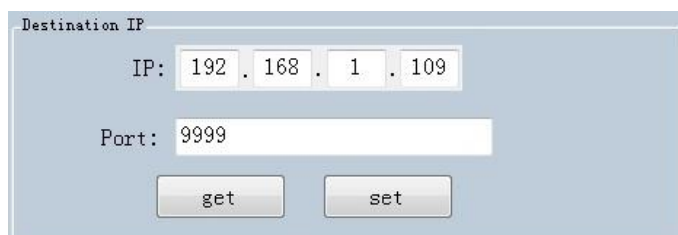
☒ ANT1 ☐ ANT2 ☐ ANT3 ☐ ANT4 ☐ ANT5 ☐ ANT6 ☐ ANT7 ☐ ANT8
☐ ANT9 ☐ ANT10 ☐ ANT11 ☐ ANT12 ☐ ANT13 ☐ ANT14 ☐ ANT15 ☐ ANT16

get set Save

ANT: ANT1 ▼ workTime: 200 10-65535ms

get set Save

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



Destination IP

IP: 192 . 168 . 1 . 109

Port: 9999

get set

Set FastID:



FastID

☐ Enable ☒ Disable

Get Set

Set TagFocus:

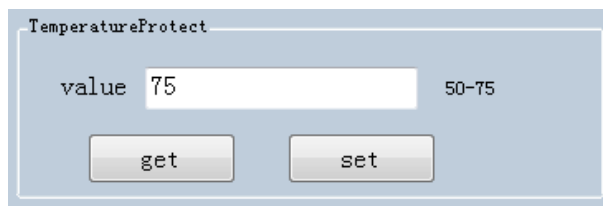


Tagfocus

☐ Enable ☒ Disable

Get Set

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

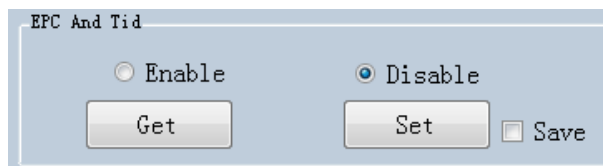


TemperatureProtect

value 75 50-75

get set

Set EPC and TID:



EPC And Tid

☐ Enable ☒ Disable

Get Set ☐ Save

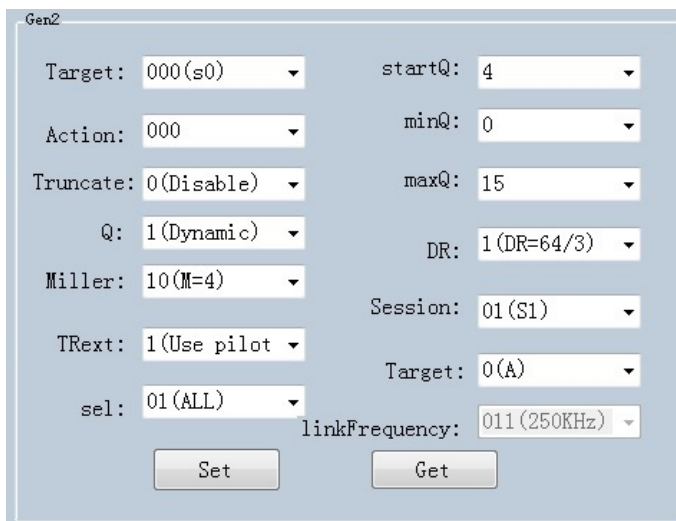
Reset, click “Reset” button to restore device to default value. After reset, user needs to click “Close” and “Open” to reconnect the device.



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



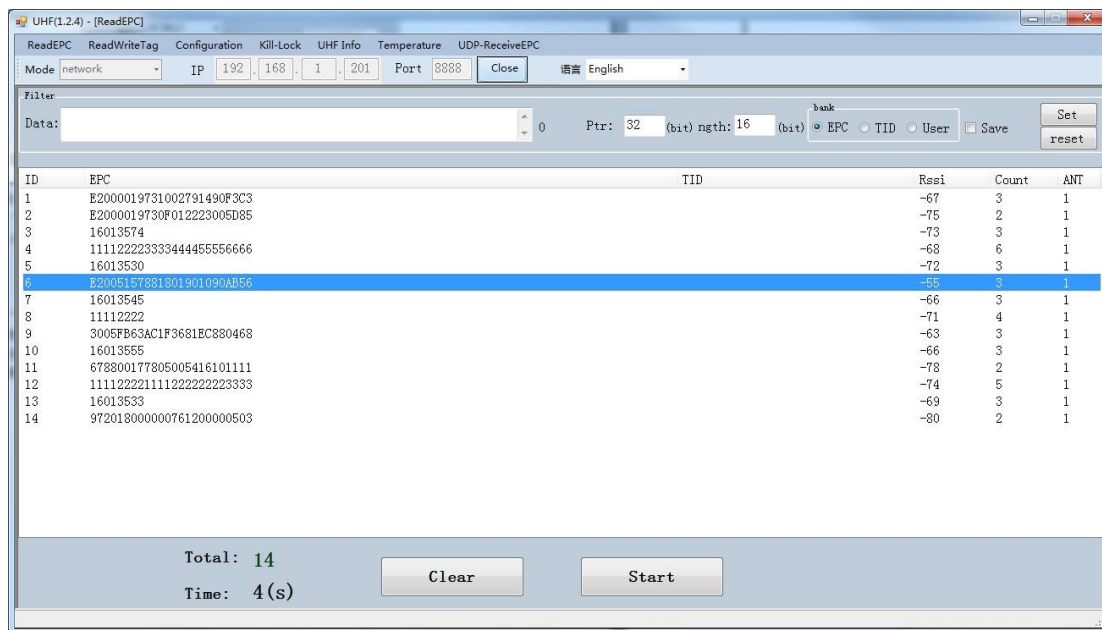
Set Gen2, this parameter needs to be adjusted by actual requirements.



Chapter 3 Read and Write EPC

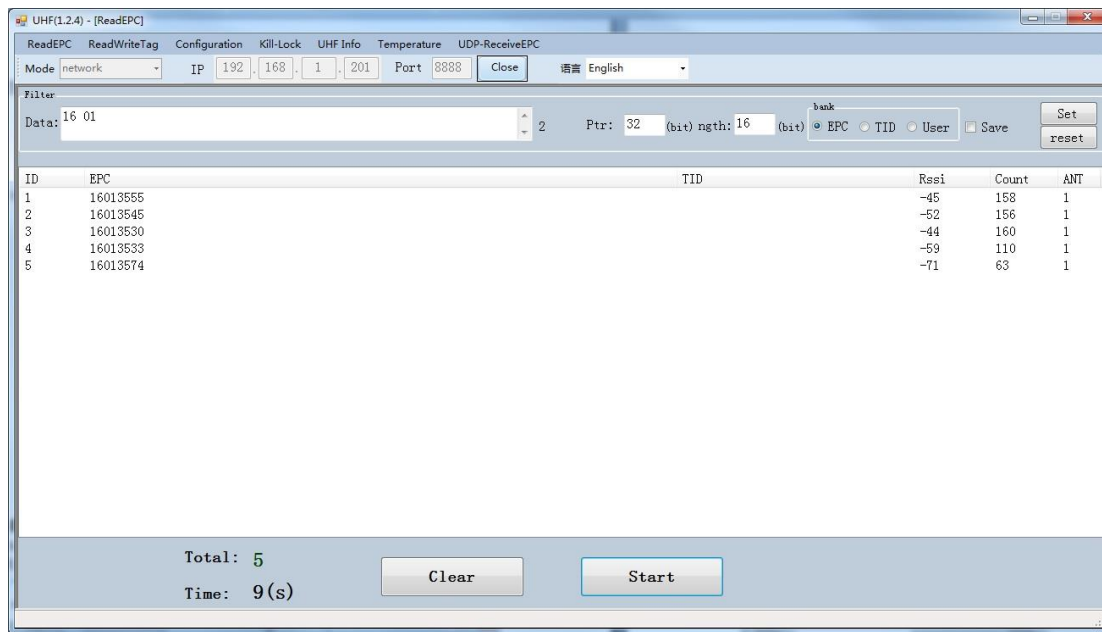
3.1 Read EPC

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:



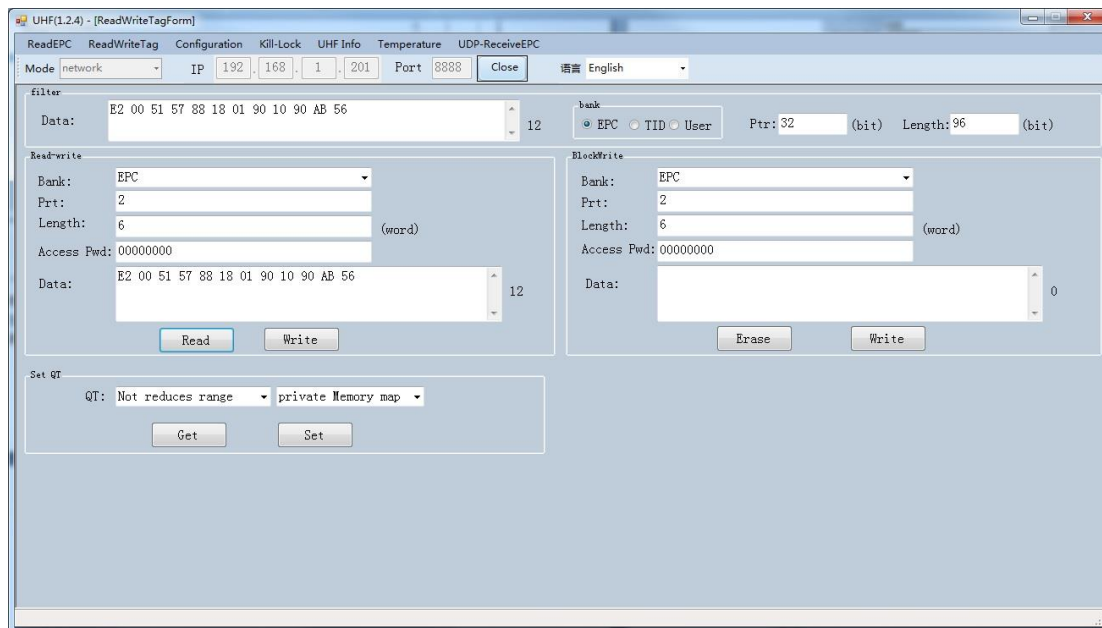
User could enter data in “Filter” to filter EPC of special tags, the maximum filter DL is 96 bits. User needs to setup data, initial address, data length and click “Set”. After filtered data has been set, the device will read and search for the tag which has been filtered.

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.



filter

Data: E2 00 51 57 88 18 01 90 10 90 AB 56 12

Read-write

Bank: EPC

Prt: RESERVED

Length: EPC (word)

Access Pwd: 00000000

Data: 0

Read Write

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.

filter

Data: E2 00 51 57 88 18 01 90 10 90 AB 56 12

Read-write

Bank: EPC

Prt: 2

Length: 6 (word)

Access Pwd: 00000000

Data: E2 00 51 57 88 18 01 90 10 90 AB 56 12

Read Write

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

The screenshot shows a software interface with a 'filter' section at the top containing a 'Data' field with the value 'E2 00 51 57 88 18 01 90 10 90 AB 56' and a '12' indicator. Below this is a 'Read-write' section. It includes a 'Bank' dropdown menu set to 'RESERVED', a 'Prt' field with '0', a 'Length' field with '4' and a '(word)' label, and an 'Access Pwd' field with '00000000'. The 'Data' field in this section contains '20 18 20 18 20 18 20 18' and a '8' indicator. At the bottom of the 'Read-write' section are 'Read' and 'Write' buttons.

Read TID area:

The screenshot shows the same software interface as above, but with the 'Bank' dropdown menu set to 'TID'. The 'Length' field now contains '6' and the 'Data' field contains 'E2 00 34 12 01 3C FA 00 09 AC AB 56' with a '12' indicator. The 'Read' and 'Write' buttons remain at the bottom.

Read USER area:

The screenshot shows a software interface with two main sections: 'filter' and 'Read-write'.

filter section:

- Data:** A text box containing the hexadecimal string 'E2 00 51 57 88 18 01 90 10 90 AB 56'. To the right of the text box is a vertical scrollbar and the number '12'.

Read-write section:

- Bank:** A dropdown menu with 'USER' selected.
- Prt:** A text box containing '0'.
- Length:** A text box containing '4', followed by '(word)'.
- Access Pwd:** A text box containing '00000000'.
- Data:** A text box containing the hexadecimal string '12 34 12 34 12 34 12 34'. To the right of the text box is a vertical scrollbar and the number '8'.
- Buttons:** At the bottom, there are two buttons: 'Read' and 'Write'.

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.

UHF(1.2.4) - [Kill_LockForm]

ReadEPC ReadWriteTag Configuration Kill-Lock UHF Info Temperature UDP-ReceiveEPC

Mode: network IP: 192.168.1.201 Port: 8888 Close 语言: English

filter
Data: E2 00 51 57 88 18 01 90 10 90 AB 56 12

lock
Access Pwd: 20 18 20 18 Can't use the default password
☒ Open ☐ Lock ☐ Permanent Open ☐ Permanent Lock
☐ Kill-pwd ☐ Access-pwd ☐ EPC ☐ TID ☒ USER
LockData: 00 08 00 Confirm

BlockPermLock
Bank: USER
Ptr: 0
Access-pwd: 00000000
ReadLock: Read
☐ block-1 ☐ block-2 ☐ block-3 ☐ block-4 ☐ block-5 ☐ block-6 ☐ block-7 ☐ block-8
☐ block-9 ☐ block-10 ☐ block-11 ☐ block-12 ☐ block-13 ☐ block-14 ☐ block-15 ☐ block-16
Maskbuf: Confirm

Kill
Access Pwd: 20 18 20 18 Can't use the default password
kill

filter
Data: E2 00 51 57 88 18 01 90 10 90 AB 56 12

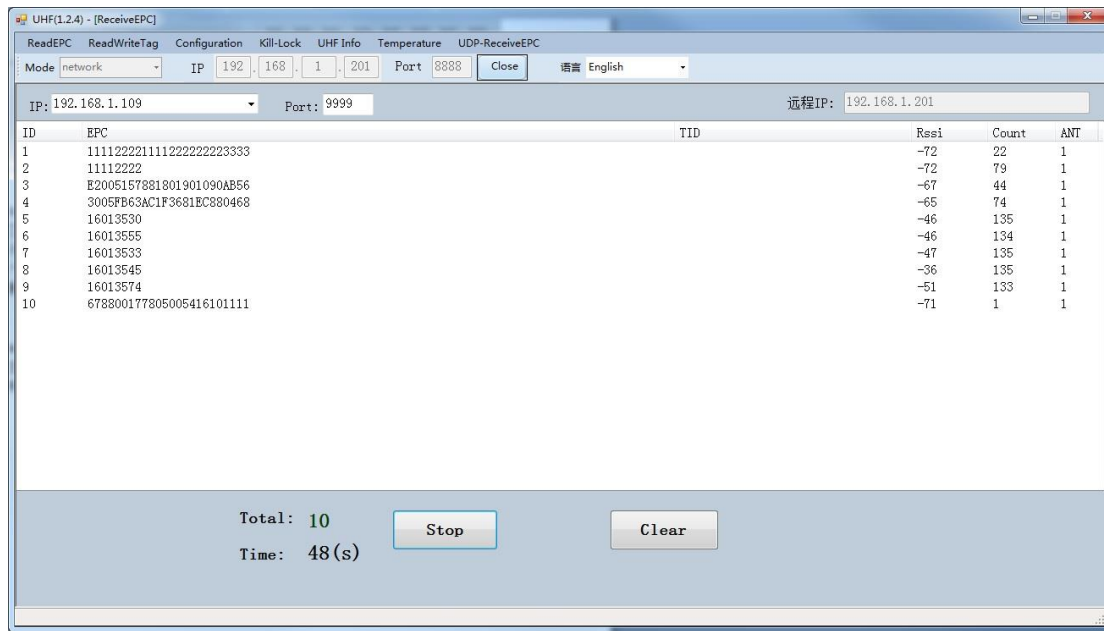
lock
Access Pwd: 20 18 20 18 Can't use the default password
☒ Open ☐ Lock ☐ Permanent Open ☐ Permanent Lock
☐ Kill-pwd ☐ Access-pwd ☐ EPC ☐ TID ☒ USER
LockData: 00 08 00 Confirm

Kill
Access Pwd: 20 18 20 18 Can't use the default password
kill

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.