USR-TCP232-410S Manual

File Version: V1.0.0

Contents

1. Quick Start

USR-TCP232-410S Serial Device Server is used to data bidirectional transparent transmission from serial to Ethernet. User doesn't need to consider details because protocol conversion is made within the server. The serial side is serial data and the Ethernet side is TCP/IP data packet, which works through simple configuration on built-in webpage or setting software.

Any question during testing, please submit it on our technical support center: http://h.usriot.com

1.1. Hardware Testing Environment

Connect 410S (shorten for USR-TCP232-410S) 'COM with PC's via serial cable(or USB to serial cable).
Connect network interface between 410S' and PC's via network cable.
Then supply power for 410S with our AC adapter((make sure you can supply at least 200mA current at DC5V)).
The below picture will show you the connection.

Hardware Connection

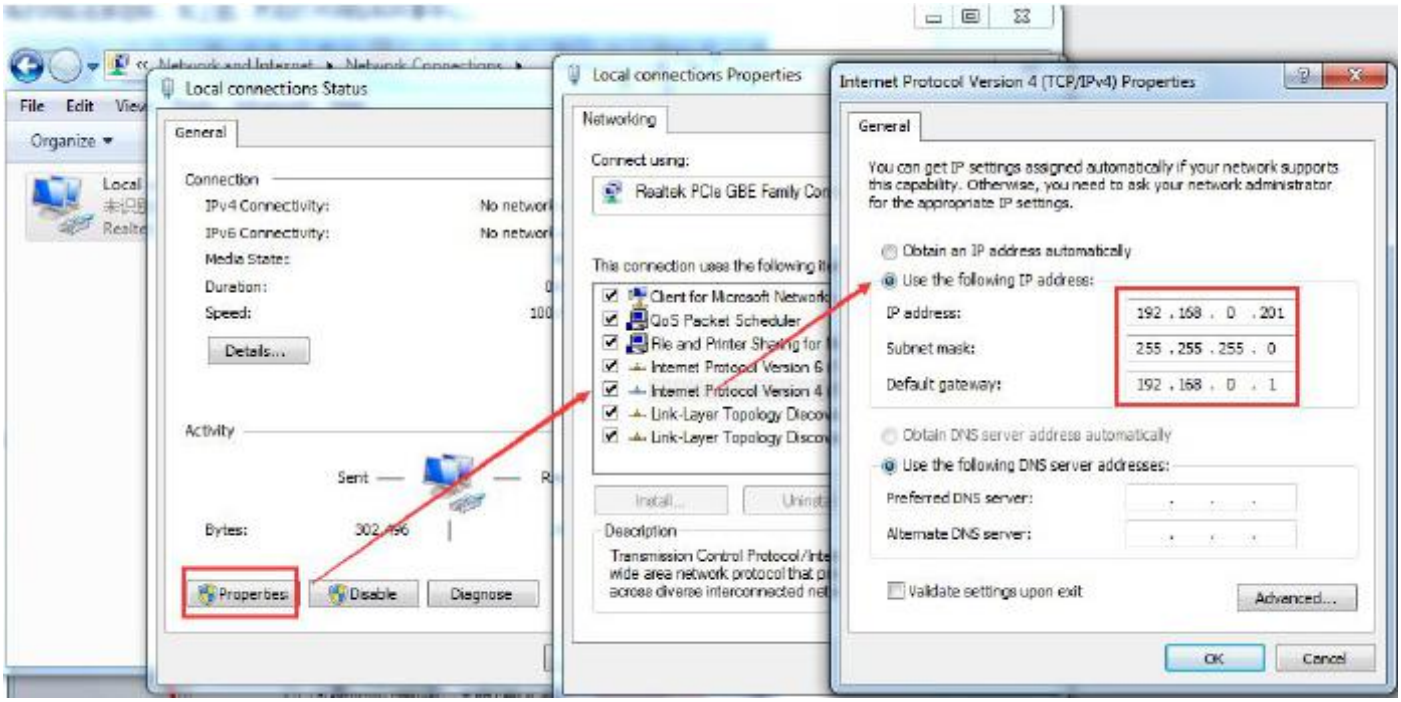
Notes:

- AC adapter and connection cable are provided by USR IOT.
- RS232 is involved, no connection for RS485.
- PCs in above picture is the same one.

1.2. Data Transmission Testing

Check PC setting after hardware connection.

1) Turn off PC Firewall and anti-virus software.
2) Disable the network card nothing to do with testing and just leave one local connection.
3) As for 410S connect PC directly, should set static IP for PC, which in the same network segment with 410S, like 192.168.0.201.



PC Local Connection Configuration

1.3. Default Parameter Test

Default parameter is as below excel:

User name	admin
Password	admin
IP address	192.168.0.7
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Default Work Mode	TCP Server
Default Local Port	23
Baud Rate	115200
Parity bit/Data bit/Stop bit	None/8/1

Data Transmission Test:

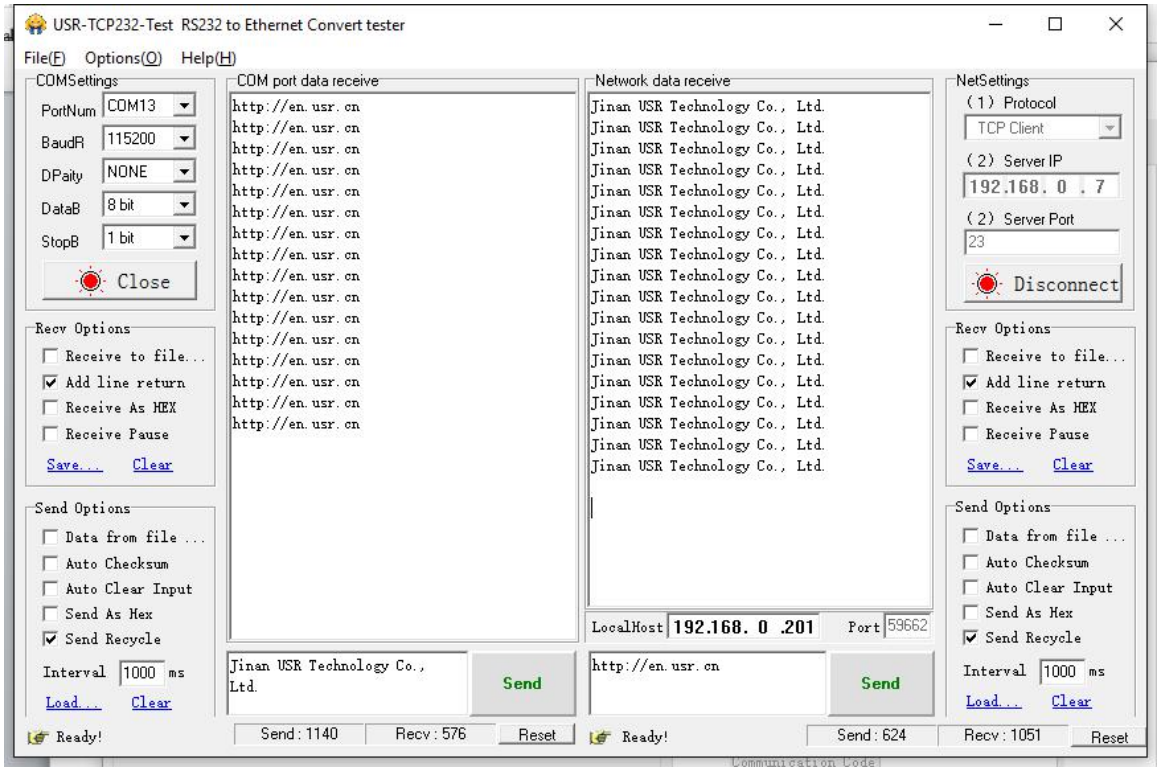
1) Open test software “USR-TCP232-Test.exe”, and do hardware connection according to Chapter 1.1 Hardware Testing Environment.
2) The right side is Network Settings: TCP Client, IP address: 192.168.0.7, port #: 23, click “Connect” to build TCP connection.
   The left side is Serial Settings: Baud Rate: 115200, Parity/Data bit/Stop bit: None/8/1,
   Click “Open” to enable the COM.

Then we can test data transmission between COM and network.

Data from serial to network is: PC’ COM->410S’ COM->410S Ethernet port->PC Network;

Data from network to serial is: PC Network->410S Ethernet port->410S’ COM-> PC’s COM.

The below picture is for your reference:



Default Parameter Test

2. Overview

2.1. Brief Introduction

USR-TCP232-410S is to transmit transparently between TCP/UDP data packet and RS232/RS485 interface. It carries ARM Processor, low power, fast speed, high stability.

2.2. Features

1. Multiple indicator lights for convenient debugging
2. Power-line terminal for industrial application
3. ARM kernel, Industrial operating temperature range and reliable TCP/IP protocol stack
4. Auto-MDI/MDIX,RJ45 port with 10/100Mbps
5. TCP Server,TCP Client,UDP,UDP Server and HTTPD Client work mode
3. Two ports can work independently at the same time
4. Distinguish connected serial ports via port#
5. Support virtual serial port and provide corresponding software USR-VCOM
6. Serial baud rate from 600bps to 230.4K bps; Check bit of None,Odd,Even,Mark and Space
7. Support static IP, DHCP and search devices within network through UDP broadcast.
8. Provide serial and network setting protocol, key codes explanation
9. Provide PC TCP/IP SOCKET programming example,VB,C++,Delphi,Android,IOS
10. Built-in webpage; also can customize webpage for VIP customers
11. Reload button,one key to restore default settings
12. RJ45 with Link/Data indicator light,built-in isolation transformer and 2 KV electromagnetic isolation
13. The global unique MAC address bought from IEEE, also user can define MAC address
14. Support upgrade firmware via network
15. Support DNS
16. Support web port revise (80 by default)
17. Support keepalive, detect dead links and reconnect rapidly
18. Support account and password, used to page log in and network settings safely
19. Support one channel Websocket,realize bidirectional transparent transmission between webpage and serial.
20. Support Modbus RTU to Modbus TCP
21. Support UDP broadcast function, send and receive data from all IP in the network

2.3 Declaration of Compatibility with USR-TCP232-410

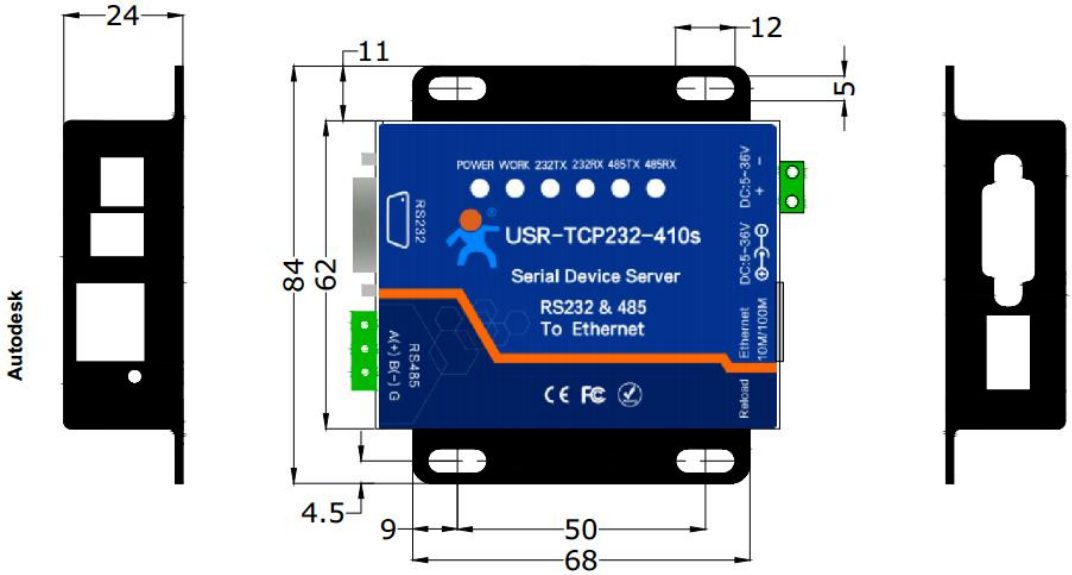
410S' software is fully compatible with 410, as well as power interface, RS485 interface, RS232 interface and network interface, not for outlook and size.

2.4 Basic Parameter

Parameter	Value
Input Voltage	DC5～36V
Working Current	90mA@5V
Operating Temp.	-40～+85°C
Power	<1W
Storage Temp.	-45～105°C, 5～95%RH

3. Hardware

3.1 Dimension

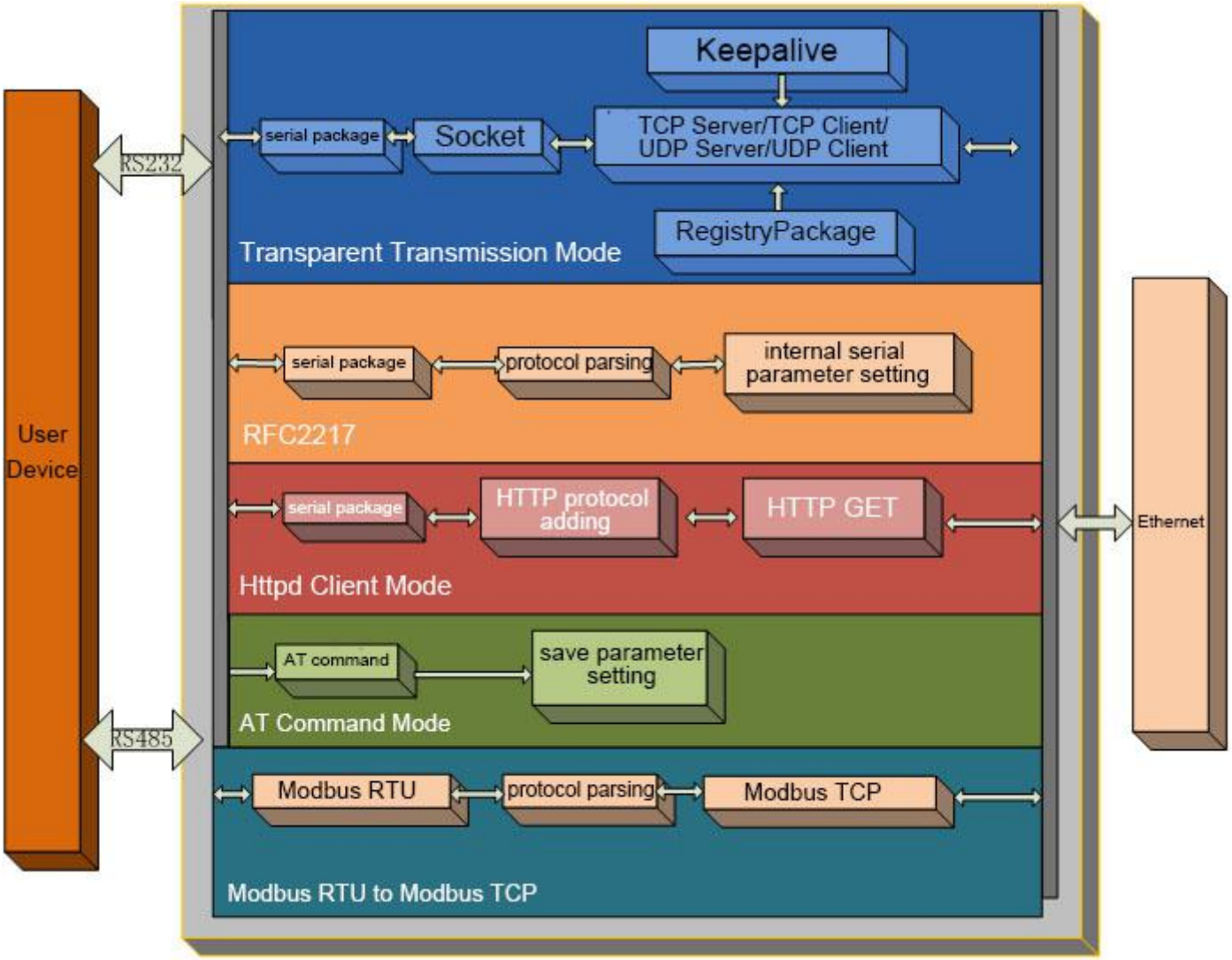


3.2 Indicators

1) POWER: indicate power. It is on when power is supplied.
2) WORK: indicate working status. It twinkles when 410S works well. If it is on or off for a period, 410S works improperly, you should cut the power and restart.
3) 232TX: It twinkles when 410S RS232 sends data.
4) 232RX: It twinkles when 410S RS232 receives data.
5) 485TX: It twinkles when 410S RS485 sends data.
6) 485RX: It twinkles when 410S RS485 receives data.

4. Software Design Reference

4.1 Functions



410S Function Diagram

4.1.1 TCP Client Mode

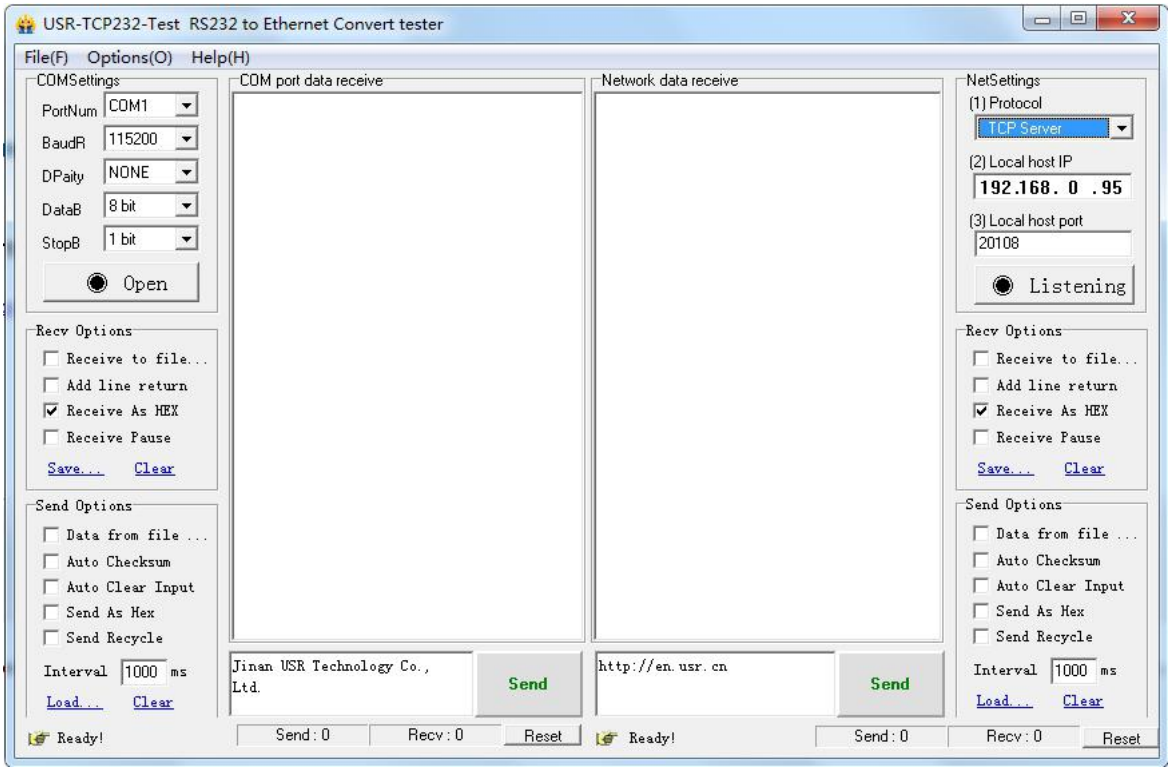
1) Different from UDP mode, its connection can be disconnected and kept.
2) Identify disconnects. After connection built, it sends keepalive searching packet every 15 seconds. Once there is an interrupt, it can be detected rapidly then make 410S disconnect from former connection and reconnect.
3) It will connect to same source port when 410S try to connect server and local port is not “0”.
4) It supports USR Synchronous baud rate (Similar RCF2217), which can revise 410S’ serial parameter as baud rate accordingly. This function should be combined with USR-VCOM.
5) Within same LAN, 410S must be in the same network segment then can communicate. If not, 410S must be set with right one.
6) Support USR Cloud.

7) Support Modbus TCP function.
8) When 410S work under TCP Client to connect to TCP server, Destination IP and port should be cared. The IP can be device with same LAN, also can be different LAN or cross public network. If it connects to server cross public network, the server should have public IP.
9) When 410S work under TCP Client, It connect to the port of destination IP actively, not accepting other connection request.
10) When 410S work under TCP Client, need to set 410S's local port# to be "0 then it can visit server with randomized, so that it can solve in-successful re-connection in case server judge connection status abnormally and shield 410S' re-connection request.

11) TCP Client Test

① USR-TCP232-TEST software:

Need to connect to PC's TCP Server, its IP: 192.168.0.95, Port#: 20108, Click "Listening"



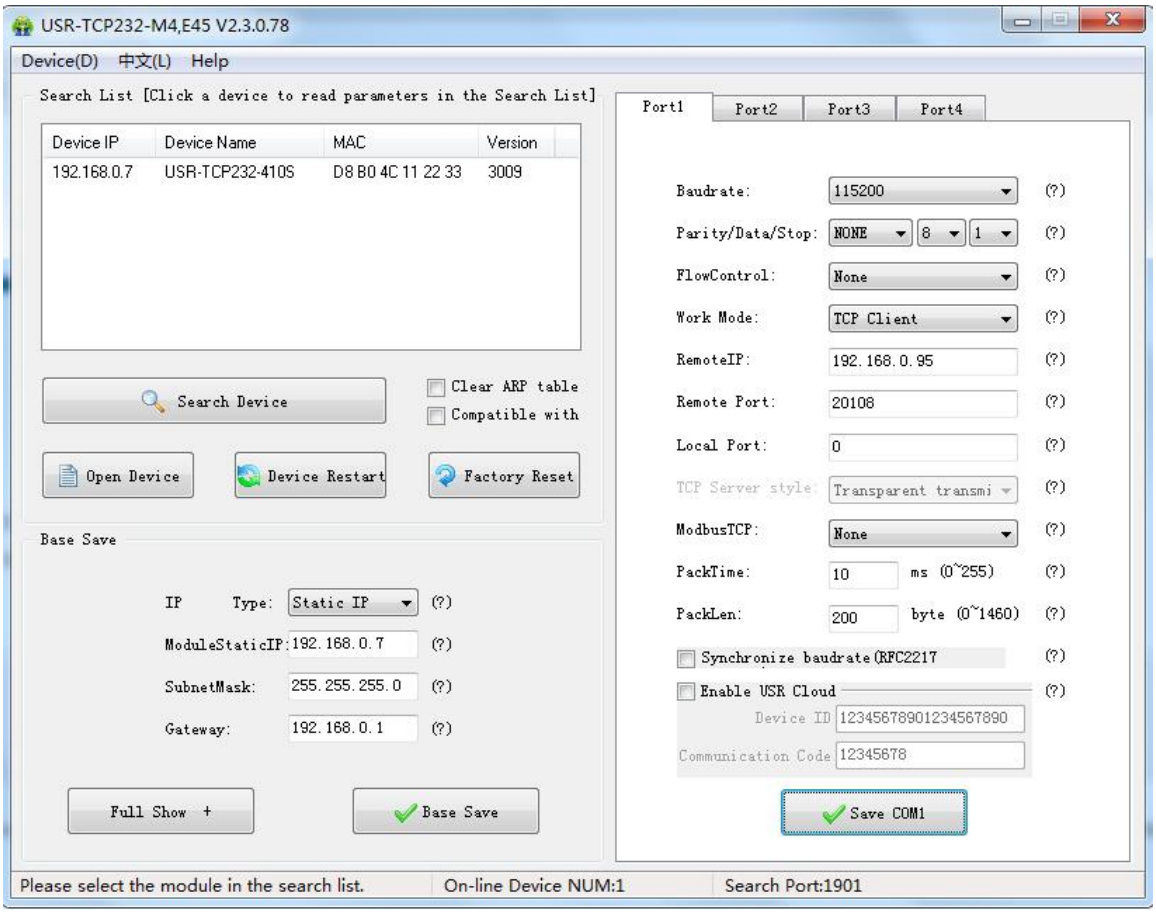
TCP Client Test Screenshot

②

Open USR-TCP232-M4, E45 setup software

Set 410S as TCP Client, Destination IP: 192.168.0.95. Destination port:20108.

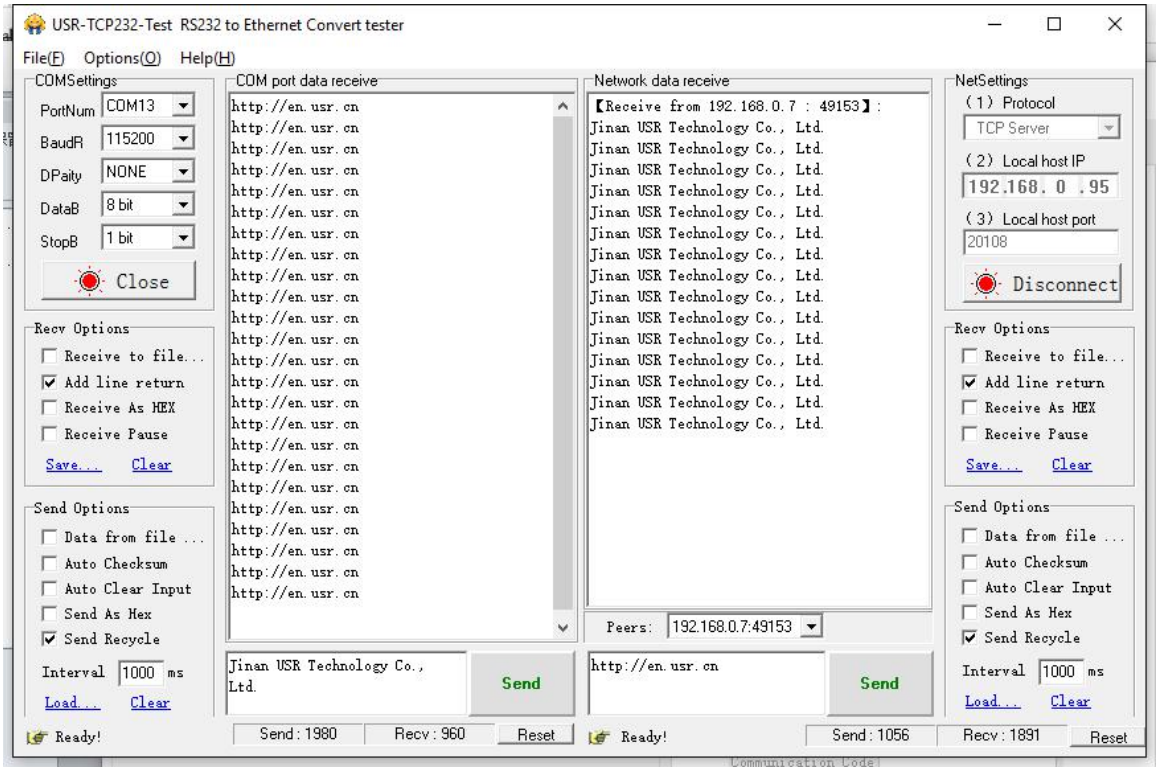
Click "Save COM1", and search 410S. Then check the parameter when 410S is found.



TCP Client Software Configuration

③ USR-TCP232-TEST software:

Configure serial parameter. Click to open the port. Test software network part shows connection message:192.168.0.7:49153(port# assigned randomly). Click “send”, you can gain data from each side.



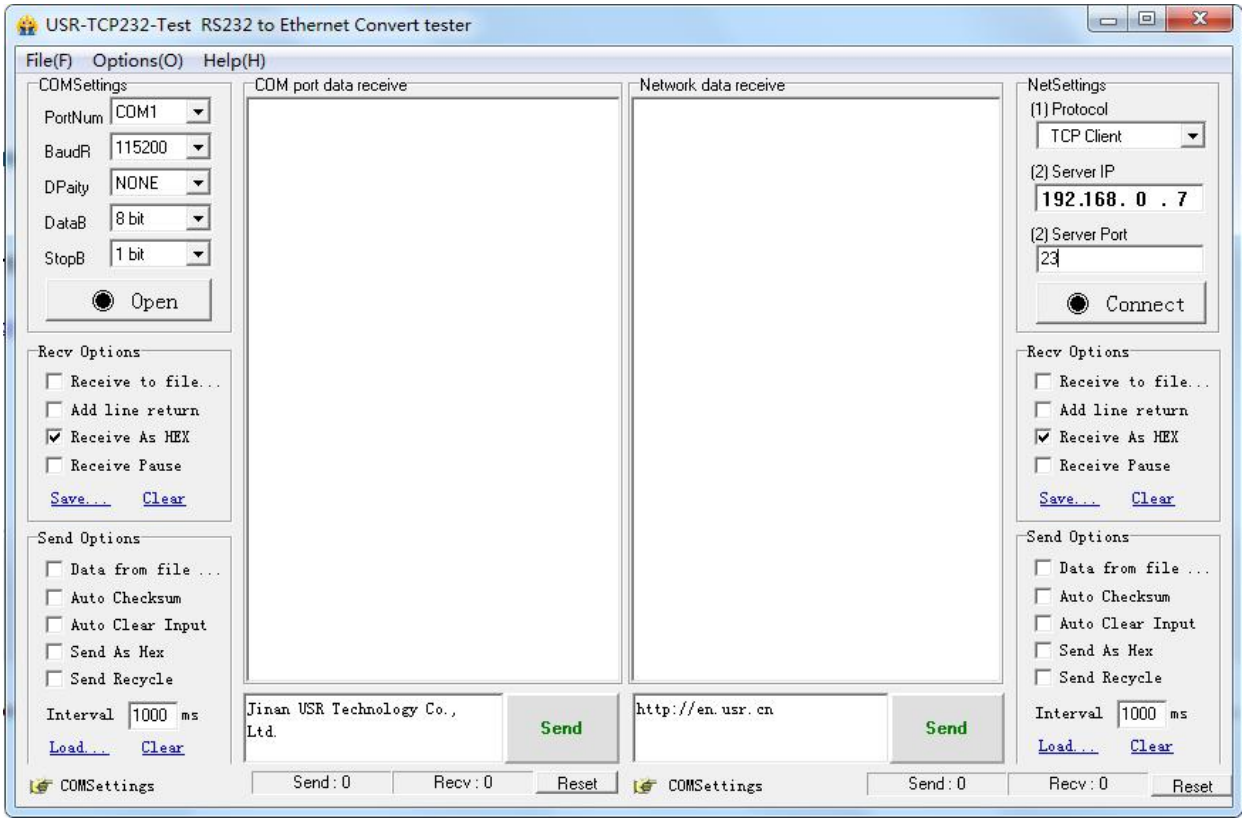
TCP Client Software Configuration

4.1.2 TCP Server Mode

1) Different from UDP, its connection can be disconnected and kept.
2) 410S listens to local port set firstly, respond and build connection when there is a request. COM send data received to all devices connected with 410S at the same time.
3) It supports USR Synchronous baud rate (Similar RCF2217), which can revise 410S' serial parameter as baud rate accordingly. This function should be combined with USR-VCOM.
4) It support 8 clients connections at max. (32 clients will be improved in the following.)
5) Support Modbus TCP function.
6) Under TCP Server mode, 410S listens to local port actively and no monitoring for IP and port connected. When the 9th client is connected, the oldest one will be ticked.
7) Test

   Set 410S TCP Server Mode, local port 23, same as default.

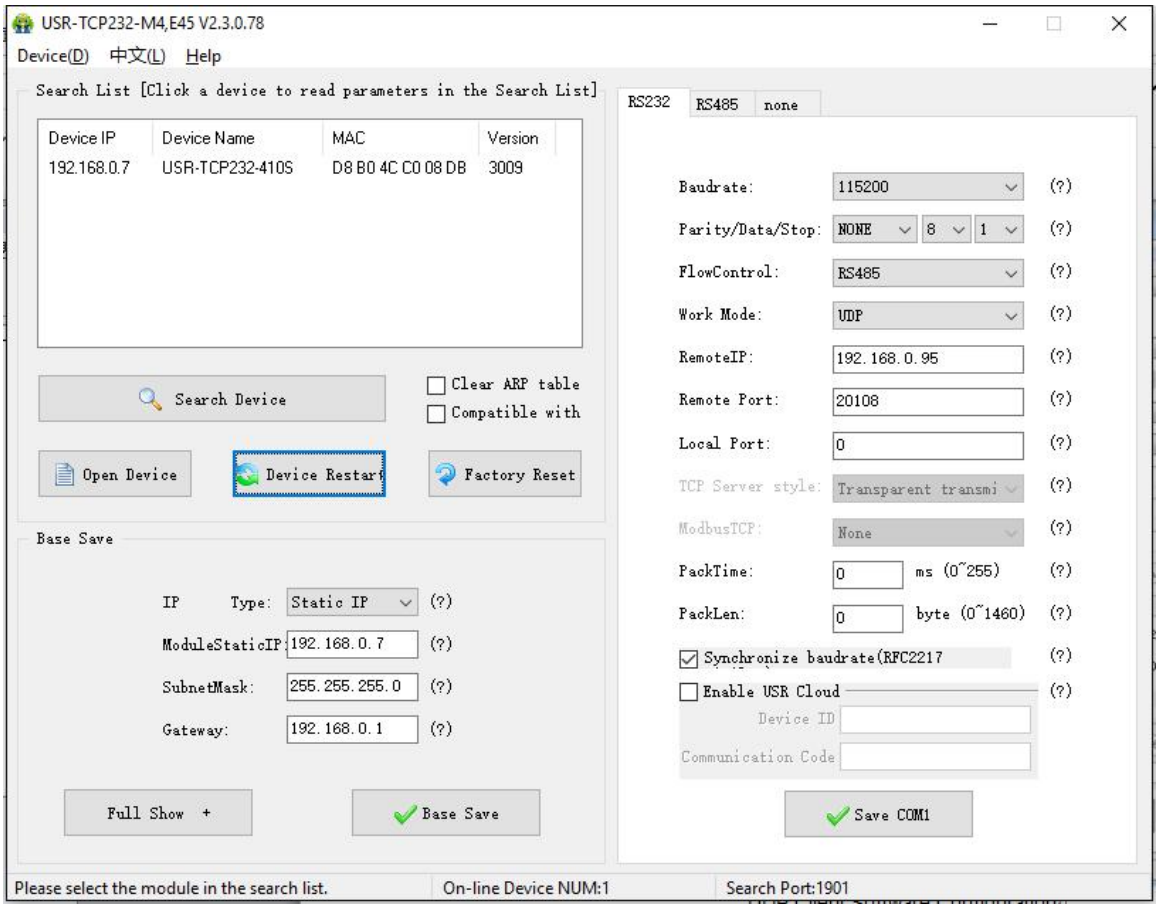
Open USR-TCP232-TEST Software: set the mode: TCP Client, Destination IP and port. Click"Connect" to test data transmission.



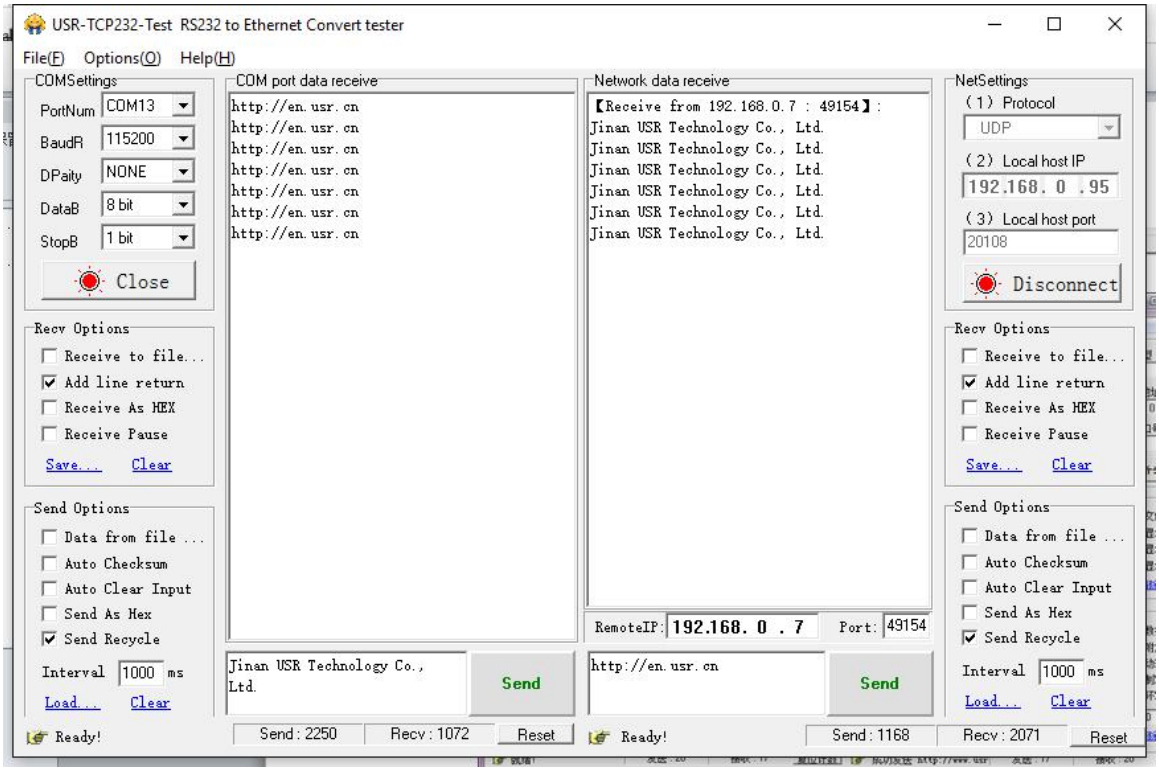
TCP Server Test Screenshot

4.1.3 UDP Client Mode

1) It belongs to UDP protocol, no connection, just sending data.
2) 410S only communicate with destination port of IP. Otherwise, the data cannot be received.
3) Destination Address is 255.255.255.255, then it can make UDP broadcast and receive broadcast data. Broadcast within segment as 192.168.0.255, it can be sent but cannot be received currently.
4) Under UDP Client and UDP Server mode, host PC allow data length 1460 bytes at max to 410S.
5) Test：
   ① Open USR-TCP232-M4, E45 Setup Software: build a UDP firstly. PC's IP is 192.168.0.95. Port to be listened is 20108.
   ② Open USR-TCP232-TEST Software: set 410S UDP Client, destination port: 20108.
   ③ Click "Send" at serial side. Destination IP and port becomes 410S' after receiving the data. Then click "Send" in network part and send data to COM.



UDP Client Software Configuration



UDP Client Testing Screenshot

4.1.4 UDP Server Mode

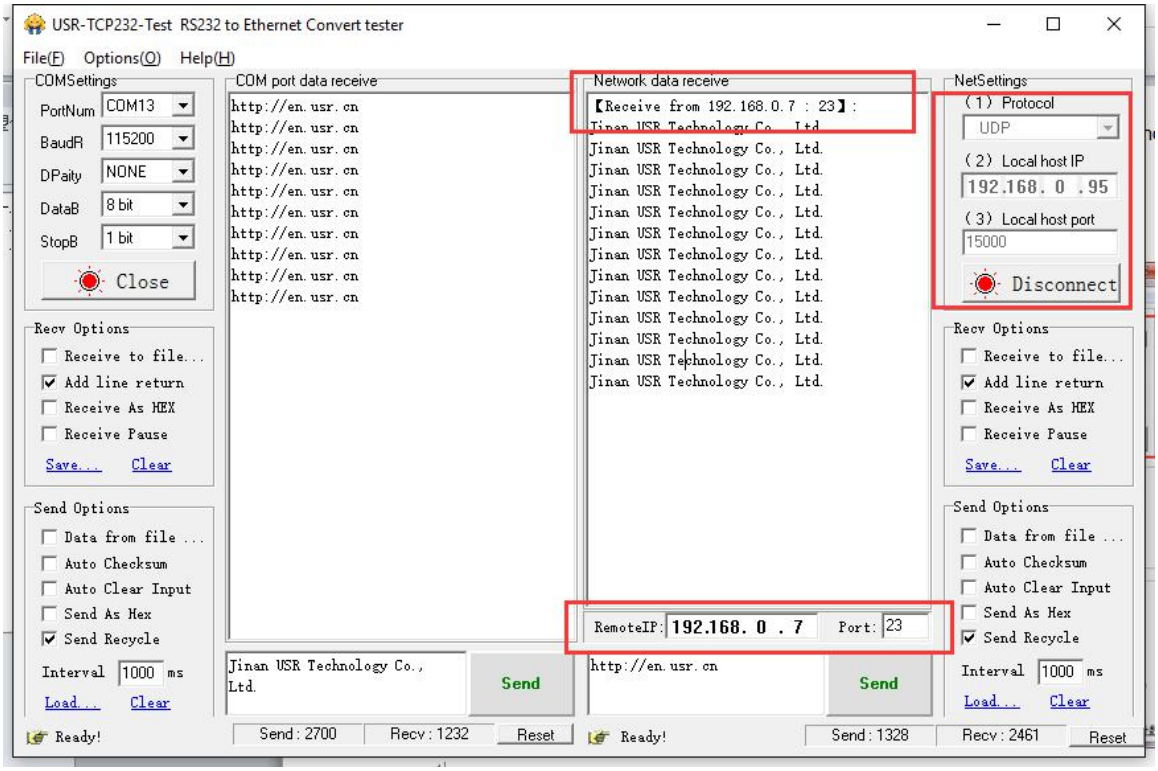
1) It doesn't verify source IP address. Every time 410S receive a UDP data packet, it revise destination IP to where data comes and it replies to the IP and port which communicate latest.
2) Test：

① Open USR-TCP232-M4, E45 Setup Software: Set 410S UDP Server, local port: 23.

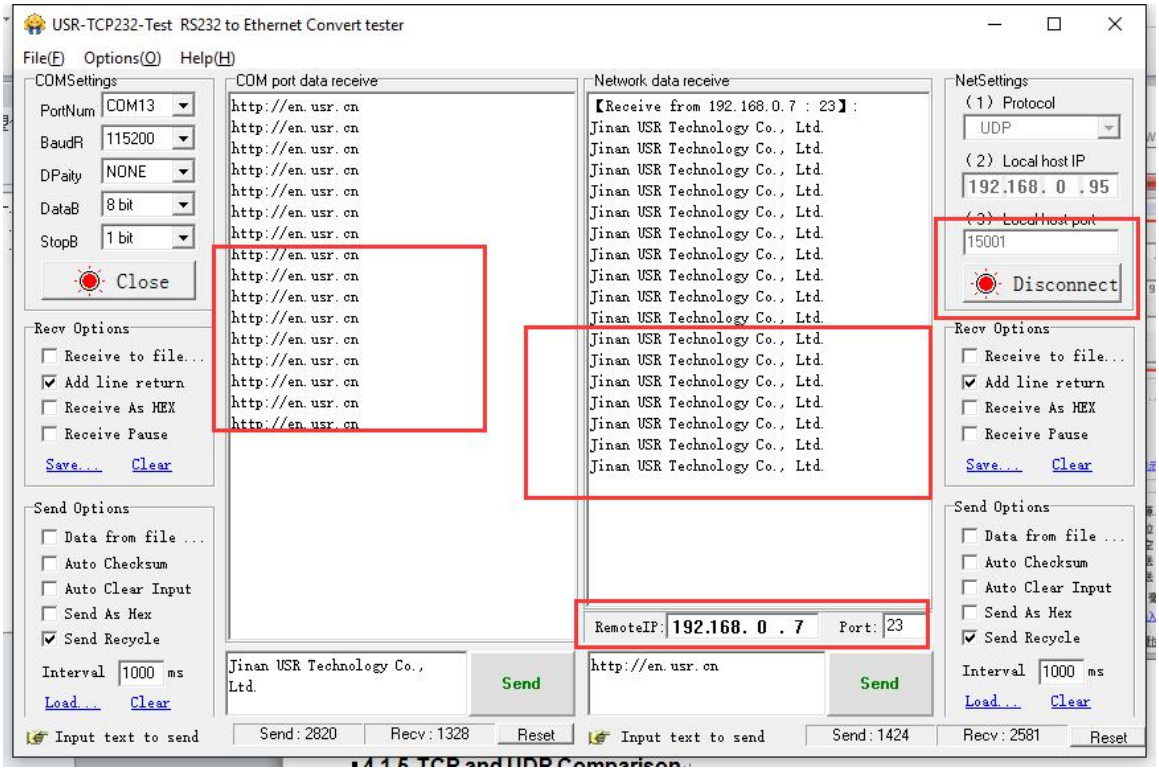
② Open USR-TCP232-TEST Software twice. Set work mode to be UDP, Destination IP and port same with 410S'.

Click "Send" then the COM receive data.

Click "Send" at serial side, only the software communicate latest can receive the data.



UDP Server Test Screenshot



UDP Server Test Screenshot

4.1.5 TCP and UDP Comparison

	TCP	UDP
Advantages	Stable, no loss Reliable connection mechanism Resend after data sending fails	No connection mechanism, simple and flexible Suit for small packet and high frequency Accurate data sending interval
Disadvantages	Long packet starting Jam for small packet and high frequency Inaccurate interval resulted from check and resend mechanism	More loss under severe network environment

4.1.6 HTTPD Client

It is used to transmit data collected by 410S to HTTP server or gain data from HTTP server.

410S handle complex HTTP protocol so user just do programming for serial, and not need to worry about HTTP.

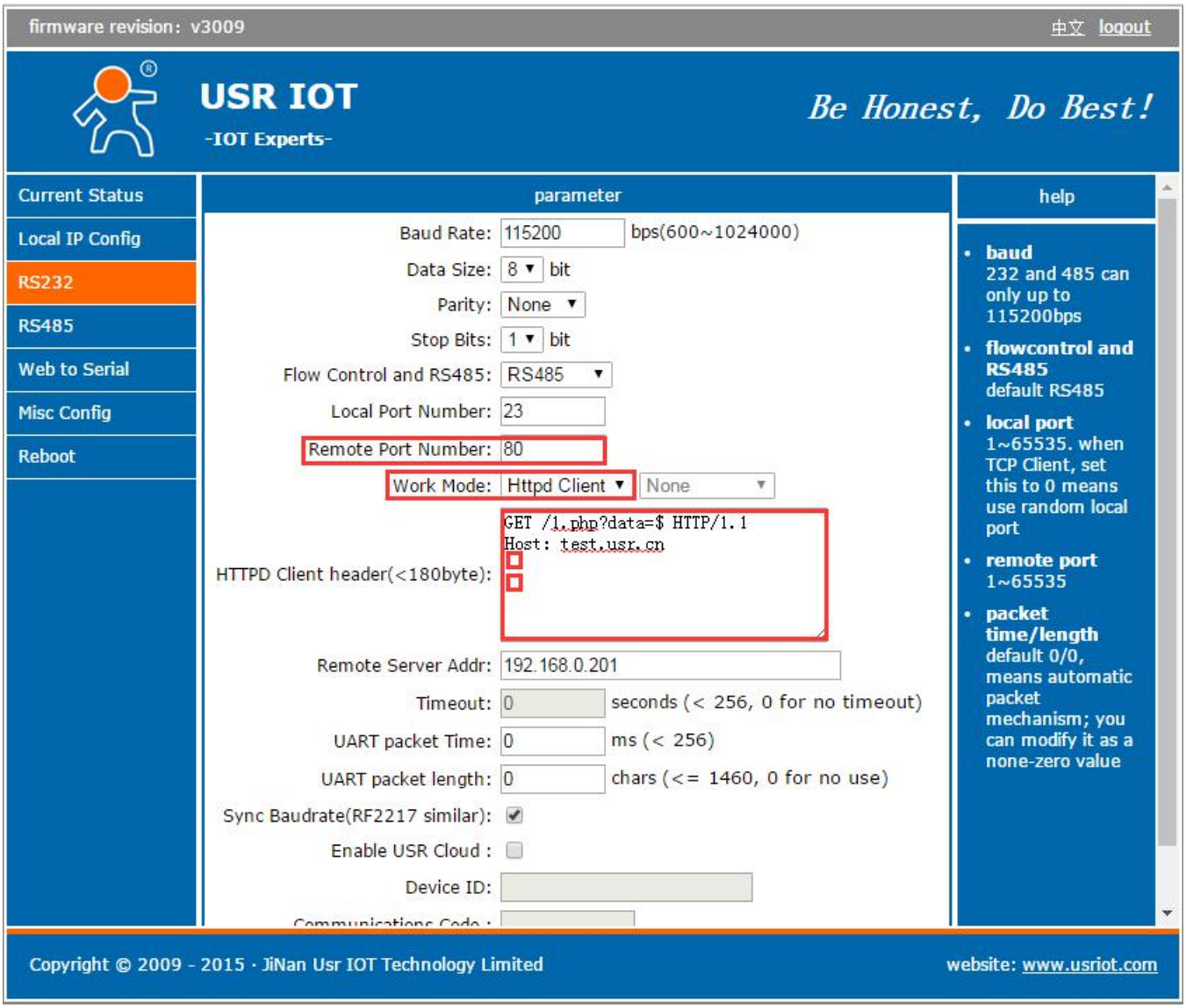
When 410S send data to HTTP server via serial, packet header needed is sent by 410S.

And 410S totally transmit the data returned, the user need to take part the packets and analysis.

Test：

Open its webpage

1. Set 410S HTTPD Client.
2. Set HTTPD packet Header.



HTTPD Client Webpage Configuration Screenshot

① HTTPD Client only support GET to request HTTPD Server. POST will be available in the following.

② GET/ is settled packet header.

③ 1.php?data= is visit/submit the page

④ $ is data sent by serial.

⑤ HTTP/1.1 is protocol requested.

⑥ Host is IP address/ domain requested.

⑦ Enter twice

3. Save the parameters and restart 410S.
4. Open serial to send data, then the data can be submitted onto our webpage server.
5. For more, please refer to Application Case on USR Website: www.usriot.com.

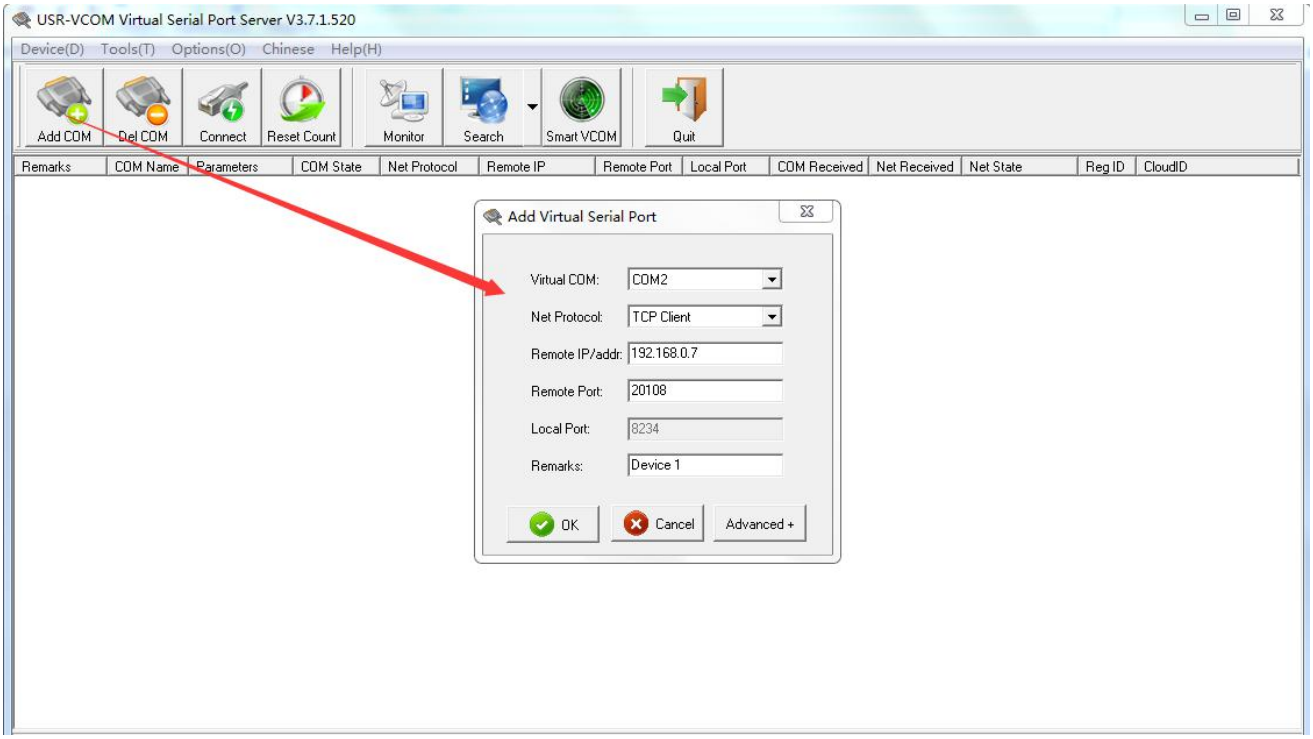
HTTPD Client Test Screenshot

4.1.7 USR-VCOM Application

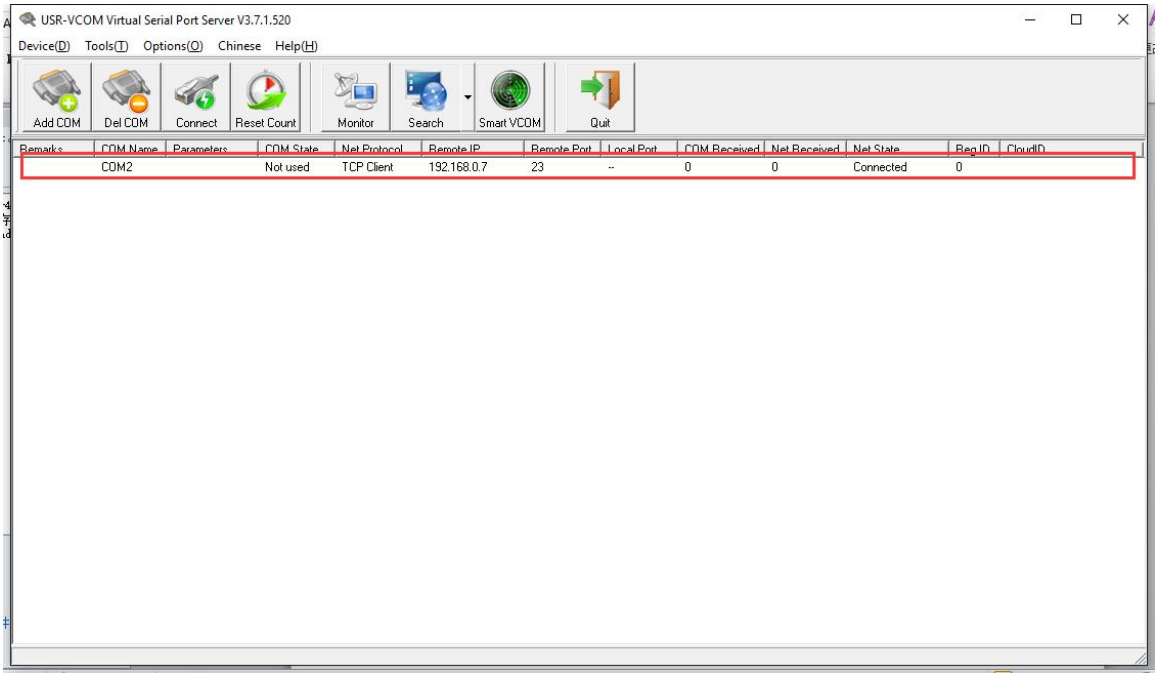
It solve the transmission problem of traditional device PC software working as COM. USR-VCOM support receiving data from set COM and send serial data out as network.

How to connect 410S with Visual COM.

1. Set 410S TCP Server
   1) Open USR-VCOM software, click “Add COM” and select COM 2 (avoid existed COM), Set protocol: TCP Client, Destination IP and port same with410S’, Note: fill the device name.
   2) “OK” to check whether connection is built. “Connected” shows ready for data transmission.
2. More details, please refer to http://www.usriot.com/?s=vcom



USR-VCOM Add a COM



USR-VCOM Build Connection

4.1.8 DHCP

DHCP is obtaining IP address automatically.

410S' IP obtaining have 2 types: DHCP and static IP. It is static IP192.168.0.7 by default.

DHCP is effective after change to DHCP and restart. When 410S connects to router or device assigning IP, it require IP address from host within network, which takes about 5-15 seconds.Then you can search 410S's IP address. It is convenient for setting different IP address in different environment.

Note: Don't set DHCP when 410S connected to PC directly because generally PC don't have the ability of assigning IP. Otherwise, 410S cannot transmit data normally, but wait for IP.

4.1.9 DNS

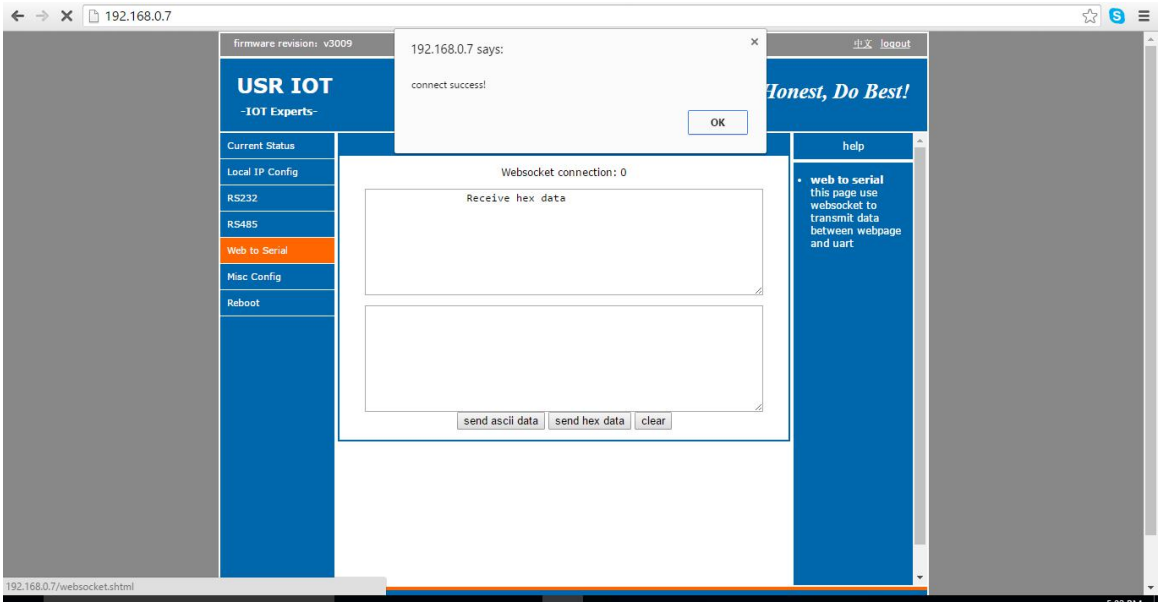
410S access the domain name or dynamic domain name when work under Client mode. The length of domain name must be less than 30 bytes .410S will analysis the domain name constantly if cannot connect to destination server.

When server's IP address is dynamics, DNS make 410S' parameter no changes if according IP doesn't change no matter how server IP address changes.

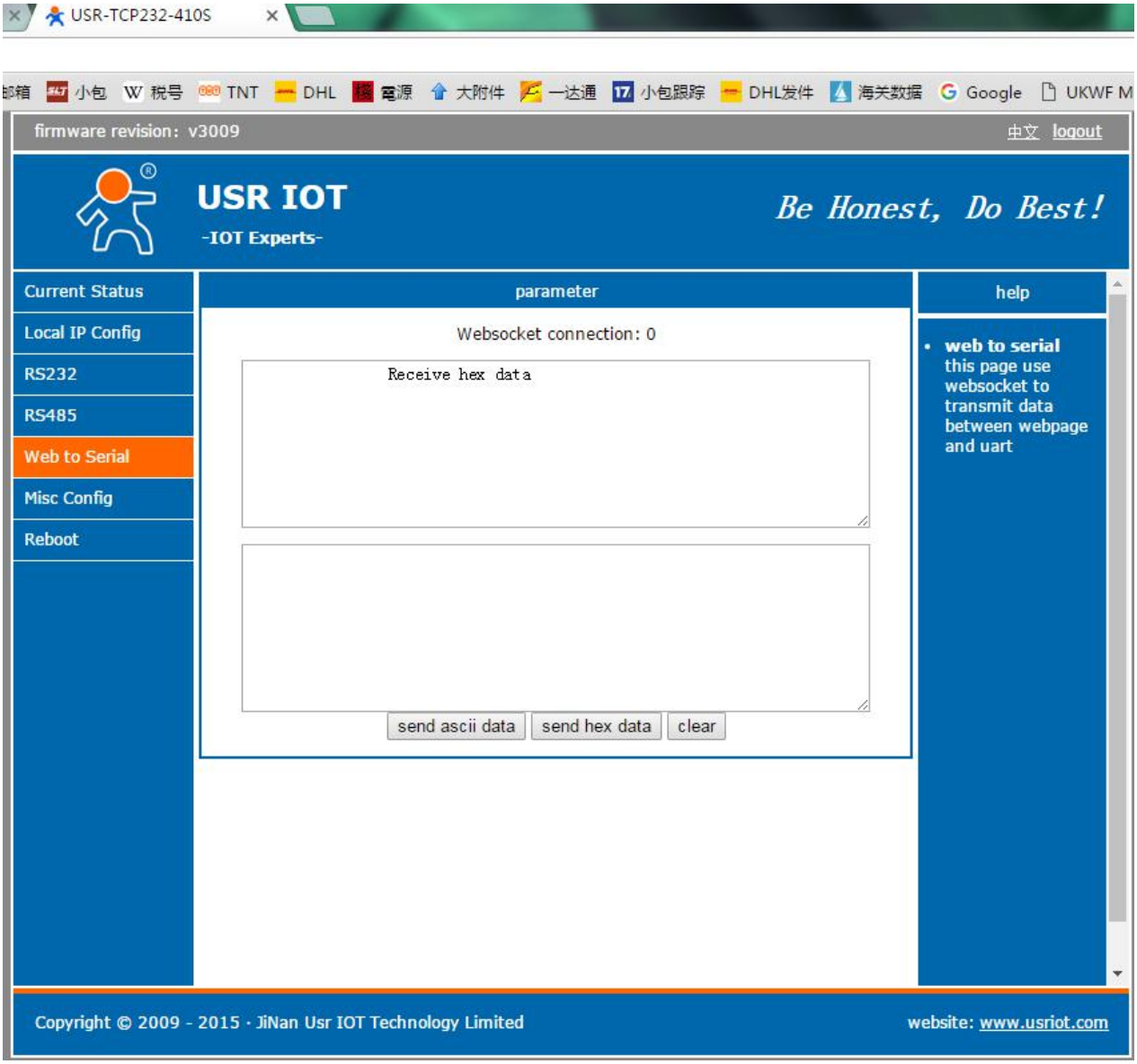
4.1.10 Webpage to serial

Webpage to serial function can make interaction between webpage and serial.

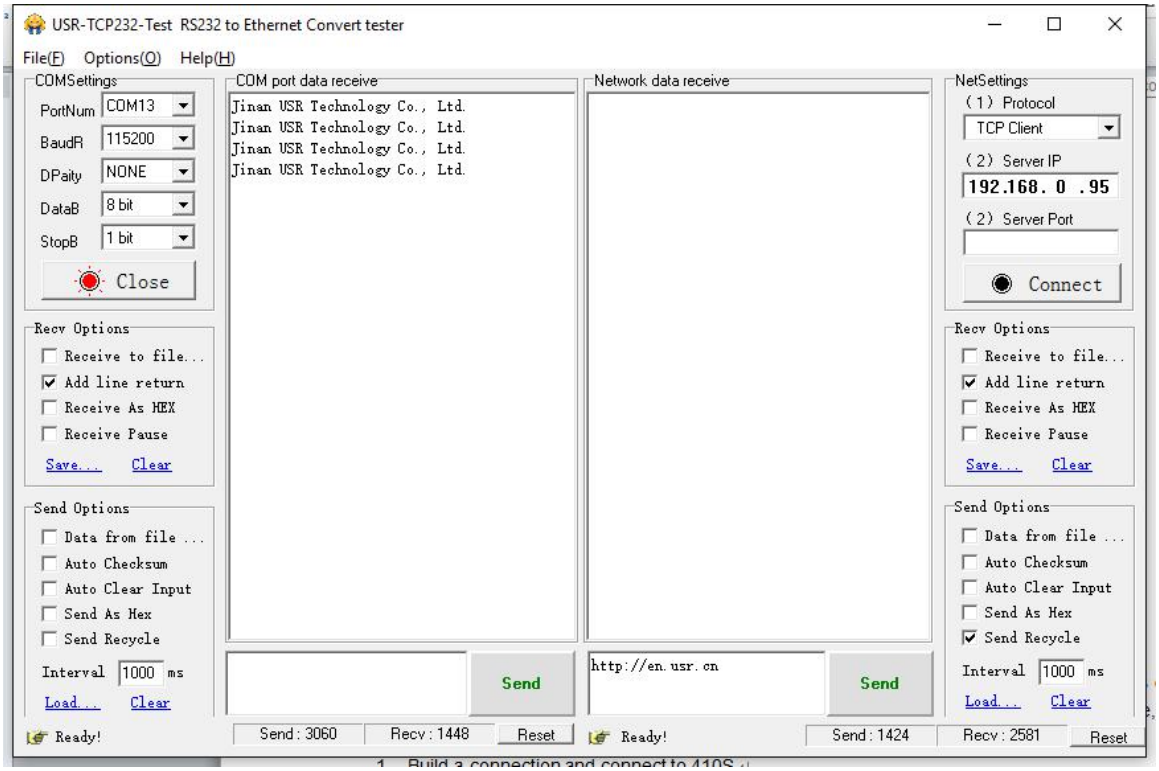
1. Set port# : 6432 as default.
2. Open webpage and click "web to serial". It pops up "connect success" then can send/receive data. Open USR-TCP232-TEST Software, configure serial parameter and click "Open".
3. Click "send ASCII data", COM can receive data. Click "Send" in TEST Software, webpage can receive data.



Web to Serial Webpage



Web to Serial COM Send/Receive Data



Web to serial test

Web to serial needs user's webpage programming ability. Design webpage, request own device's data and process data then reveal the results on webpage. According to chapter4.1.17 Customized Webpage, can download revised webpage into 410S.

1. Build a connection and connect to 410S.

```
function connectx(){
try{
socket=new WebSocket('ws://'+window.location.host+':6432');
socket.binaryType = "arraybuffer";
}catch(e){
alert('error');
return;
}
socket.onopen = sOpen;
socket.onerror=sError;
socket.onmessage=sMessage;
socket.onclose=sClose
}
```

2. Receive Data Function

```
function sMessage(msg)
```

3. Send data function

```
function send()
```

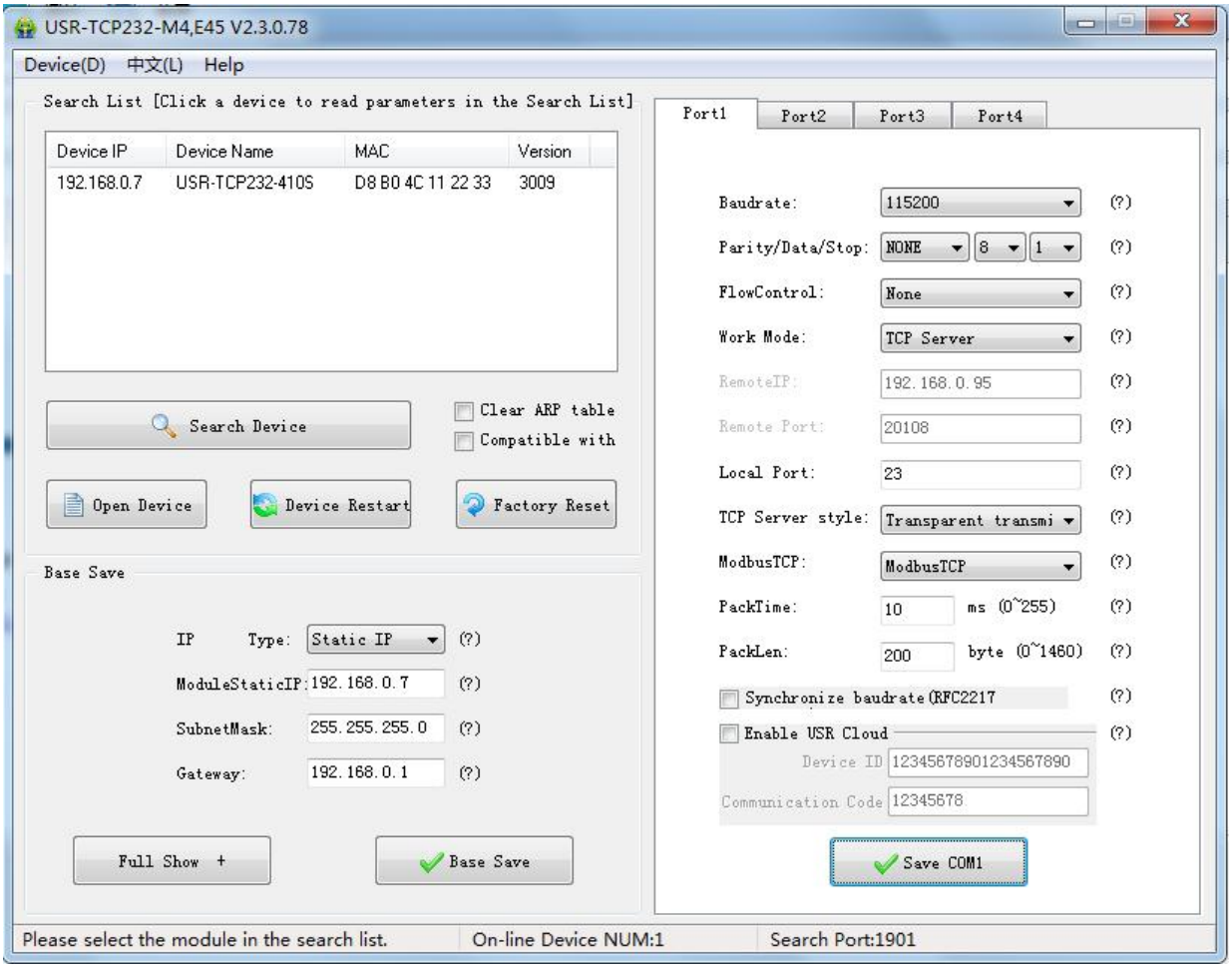
4.1.11 KeepAlive

When 410S' network is abnormal, it can judge the status in time and disconnect. And connect to server once network recovers.

4.1.12 Modbus RTU to Modbus TCP

Settings:

1. Open USR-TCP232-M4,E45 Setup Software, set 410s TCP server/TCP client mode.
2. Select "ModbusTCP"
3. Click to save the parameter



Modbus TCP Configuration

4.1.13 Device ID

The function have 2 types: send ID once connection and send ID once sending data. It is used to condition that need register packet or need packet header/tail for normal transmission.

4.1.14 Webpage Port

410S has built-in webpage server and the port is 80. Also the port can be revised and visit the web via revised port.

4.1.15 Revise MAC

User can check software's MAC address. 410S's MAC is Globally Unique. Also it support customized MAC.

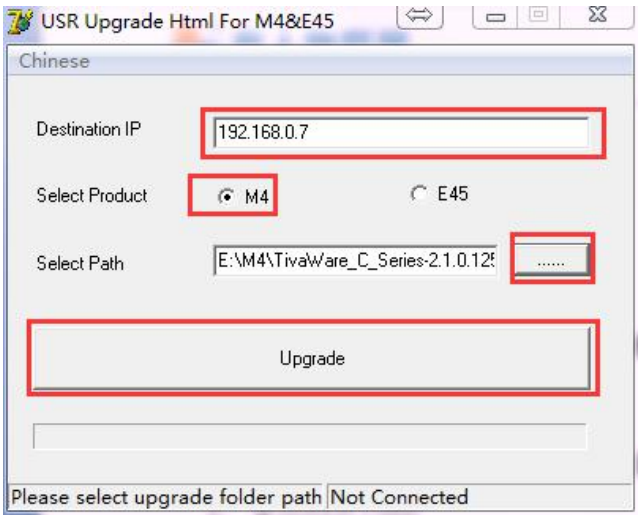
4.1.16 Firmware Upgrade

410S' firmware upgrade is fulfilled via network. For details, please refer to Chapter 5.1 configure parameter with configuration software.

4.1.17 Customized Webpage

User can make revise as logo/name on the basis of 410S webpage.

1. Download UpgradeHtml.exe. The link is http://www.usriot.com/e45-m4-seriesk3-self-defined-webpage/
2. Revise webpage code
3. Open "UpgradeHtml.exe", set 410S' IP, Select product M4 and upload revised webpage file. Then upgrade.



Customized Webpage Upgrade

4.1.18 Hardware Flow Control RTS/CTS

410S support serial RTS/CTS Hardware flow control function. It is disabled by default. Don't enable it if device doesn't support Hardware flow control .

4.1.19 Reload

Cut off power firstly.
Press "reload" and supply power. Then keep pressing reload for 5 seconds.

Reload

4.1.20 Flow Calculation

When 410S receive data from network and send to serial, user need to control the flow because of limit of serial speed. Otherwise, serial data will spill.

For example, network send data m bytes every n seconds.
m bytes should be transmitted with n seconds. And the transmit time is

$$T = \frac{1}{\text{Baud Rate}} * 10 * \text{m}$$

If n>2T, the data won't spill and 410S can work well. If baud rate is less than 9600, should keep n>T.

4.1.21 Synchronous baud rate (RFC2217)

For encryption during data transmission, devices change data bytes, baud rate, parity and so on. 410S support revise serial parameter accordingly.
Synchronous baud rate is named RFC2217. USR Similar RFC2217 make adjustments on the basis of

RFC2217 protocol to improve accuracy of transmission.

Protocol length is 8 bytes. And values taken for example is in HEX:

Name	Packet Header	Baud Rate	Bytes parameter	Parity
Bytes	3	3	1	1
Explanation	reduce misjudgment	High is in front, smallest is 600(00 02 58)	data bytes, baud rate, parity	Remove 4 bits of header and ignore the high bit
(115200, N,8,1)	55 AA 55	01 C2 00	03	46
(9600, N,8,1)	55 AA 55	00 25 80	03	28

Serial parameter bit:

Bit #	Explanation	Value	Description
1:0	Data bit selection	00	5 bits
		01	6 bits
		10	7 bits
		11	8bits
2	Stop Bit	00	1 bit
		01	2bits
3	Parity Enable	00	Disable Parity
		01	Enable Parity
5:4	Parity Type	00	ODD
		01	EVEN
		10	Mark
		11	Clear
8:6	NC	000	0

Using methods:

1. USR-TCP232-M4,E45 Setup software, click “Synchronous baud rate (RFC2217)”.
2. When serial parameter changes is needed, it send RFC 2217 packet. 410S receive the command from network and revise serial parameter accordingly.

4.2 Setting Protocol

It is network setting protocol and serial port setting protocol.

4.2.1 Network Setting Protocol

4.2.1.1 Set Parameter Process

1. Build SOCKET:
   Build UDP SOCKET, destination IP: 55.255.255.255, destination port: 1901. Low is in front.
2. Setting command process:
   ① The network send searching command
   ② 410S return IP address and MAC
   ③ The network read 410S' parameter
   ④ Organize setting command according to MAC, known user name/password and parameter to be configured.
   ⑤ Send setting command
   ⑥ 410S returns "correct setting"
   ⑦ Host PC send "save setting" command
   ⑧ 410S returns "correct"
   ⑨ Restart command
   ⑩ 410S returns "correct setting"

4.2.1.2 Setting Command Content

Command Look-up List:

Function	Header	Length	command	MAC (6 bytes)	User name /password (12bytes)	Parameter	Parity (sum)
search	FF	01	01	-	-	-	02
reset	FF	xx	02	[MAC]	[usrname] [password]	-	xx
read settings	FF	xx	03	[MAC]	[usrname] [password]	-	xx
Save settings	FF	xx	04	[MAC]	[usrname] [password]	-	xx
Basic settings	FF	xx	05	[MAC]	[usrname] [password]	Basic parameter	xx
Com 0 settings	FF	xx	06	[MAC]	[usrname] [password]	COM parameter	xx

Com 1 settings	FF	xx	07	[MAC]	[usrname] [password]	COM parameter	xx
Com 2 settings	FF	xx	08	[MAC]	[usrname] [password]	COM parameter	xx
USR Cloud			0x10	[MAC]	[usrname] [password]		

1. Command examples

① Search command example

Search command is set to:

FF 01 01 02

Sum check: 02 = 01 + 01

② Reset command example

FF 13 02 d8 b0 4c 00 04 c9 61 64 6d 69 6e 00 61 64 6d 69 6e 00 c8

Sum check:

C8 = 13 + 02 + ... + 6E + 00

User name and password both are 5 bytes+00 bits 0 for the lack.

③ Read settings command example

Send (16 bytes)：FF 13 03 AC CF 23 66 66 67 61 64 6D 69 6E 00 61 64 6D 69 6E 00 F9

④ Save reading settings command example

Send (16 bytes)：FF 13 04 AC CF 23 66 66 67 61 64 6D 69 6E 00 61 64 6D 69 6E 00 FA

2. Some commands detailed annotation

① Basic setting parameter command

Basic Parameter:

Name	Byte	Example	Explanation
ucSequenceNum	1	xx	Write the read values
ucCRC	1	xx	Write the read values
ucVersion	1	xx	Write the read values
ucFlags	1	80	IP address type: 0 in 8th bit: DHCP;1 in 8th bit: Static IP
usLocationURLPort	2	20 19	Write the read values
usHTTPServerPort	2	50 00	HTTP server port
ucUserFlag	1		Write the read values
ulStaticIP	4	38 00 A8 C0	Static IP
ulGatewayIP	4	01 00 A8 C0	Gateway
ulSubnetMask	4	00 FF FF FF	Subnet Mask
ucModName	16	55 53 52 2D 54 43 50 32 33 32 2D 45 00 00 00 00	410S name
username	6	61 64 6D 69 6E 00	username
password	6	61 64 6D 69 6E 00	password
ucNetSendTime	1		Write the read values
uiId	2	01 00	Device ID
ucIdType	1	0	Device ID type (0~3) 0:no use 1:send id when connect 2:send id when send data 3:both
ucUserMAC	6	FF FF FF FF FF FF	MAC
ucReserved	8		Unused

Example:

FF 56 05 AC CF 23 66 66 67 61 64 6D 69 6E 00 61 64 6D 69 6E 00 61 66 03 80 20 19 50 00 02 07 00 A8 C0 01 00 A8 C0 00 FF FF FF 55 53 52 2D 54 43 50 32 33 32 2D 45 34 35 00 00 61 64 6D 69 6E 00 61 64 6D 69 6E 00 02 01 00 00 AC CF 23 66 66 67 00 48 54 54 50 2F 31 2E 1C

② Port settings parameter command

Port parameter:

Name	bytes	example	Explanation
ulBaudRate	4	00 C2 01 00	Baud Rate
ucDataSize	1	08	COM data bits (0X05/0x06/0x07/0x08)
ucParity	1	01	COM parity 1: no, 2: odd, 3: even, 4: mark, 5: space
ucStopBits	1	01	COM stop bit (0x01/0x02)
ucFlowControl	1	01	COM flow control (0x01; no, 0x03:HW)
ulTelnetTimeout	4	00 00 00 00	Network reconnection time
usTelnetLocalPort	2	17 00	Local Port
usTelnetRemotePort	2	17 00	Remote Port
uiTelnetURL	30	31 39 32 2E 31 36 38 2E 30 2E 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	IP address send in ASCII. Example: 192.168.0.1
ulTelnetIPAddr	4	00 00 00 00	Not adopted
ucFlags	1	02	Enable MODBUSTCP：0x010(bit2) Enable 2217: 0x08(bit3) Enable USR cloud: 0x010(bit4)
ucWorkMode	1	03	Working mode: 0: UDP, 1: TCP Client, 2: UDP Server, 3: TCP Server, 4: HTTPD Client
uiPackLen	4	C8 00 00 00	COM pack length
ucPackTime	1	0A	COM pack time
ucTimeCount	1	91	Write the read values
TCP server type	1	1	Write the read values
ucReserved	4	Casual value	saved

Example:

FF 52 06 AC CF 23 66 66 67 61 64 6D 69 6E 00 61 64 6D 69 6E 00 00 C2 01 00 08 01 01 01 00 00 00 00 17 00 17 00 31 39 32 2E 31 36 38 2E 30 2E 32 30 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 08 03 C8 00 00 00 0A 95 11 00 00 00 00 42

4.1.1.3 Commands' Return Content

1. Return results of search command

Return command:

Bytes	Name	Example	Explanation
0	TAG_STATUS	FF	
1	Packet_length	24	
2	CMD_DISCOVER_TARGET	01	
3	Board_type	00	
4	Board_ID	00	
5~8	Client_IP_address	C0 A8 00 07	Device IP(High in front)
9~14	MAC_address	AC CF 23 20 FE 3D	Device MAC(High in front)
15~18	Firemware_version	D0 07 12 34	D0 07: device version# (low in front) 12 34: encrypted version
19~34	Application_title	55 53 52 2D 54 43 50 32 33 32 2D 35 30 30 00 00	Device name
35	checksum	F0	checksum

Example:

Return results of search command(36 bytes)

FF 24 01 00 4B C0 A8 00 4D D8 B0 4C 00 04 C9 DD 07 01 00 55 53 52 2D 54 43 50 32 33 32 2D 34 30 31 00 00 EF

The method of the check is as follow:

0xEF = 00 - FF - 24 - 01 - 00 - 4B - ... - 31 - 00 - 00

2. Return results of reset command

Response(4 bytes): FF 01 02 4B, if user name and password are right, 4B = 'K'

FF 01 02 45, if user name and password are wrong, 45 = 'E'

3. Return results of read command

Description：

Return all parameter of 410S network. 193 bytes in total, no parity, no protocol, return parameter directly.

Returned content: 193 (basic parameter+serial parameter+serial parameter)

4. Return results of save settings command
   If settings are correct, it returns:
   FF 01 04 4B
5. Return results of basic settings command
   FF 01 05 4B
6. Others return results
   Sum check fault returns 'E' + right parity
   Correct execution: FF 01 CMD 'K'
   User name/password fault returns: FF 01 CMD 'P'
   Others faults return: FF 01 CMD 'E'

4.2.2 Serial Setting Protocol

Serial AT commands, please wait for updating.

5. Parameter Configuration

It is setup software configuration, webpage configuration and serial configuration.

How to configure:

Revise user name/password→set IP access method→serial parameter→410S work mode→work mode related parameter

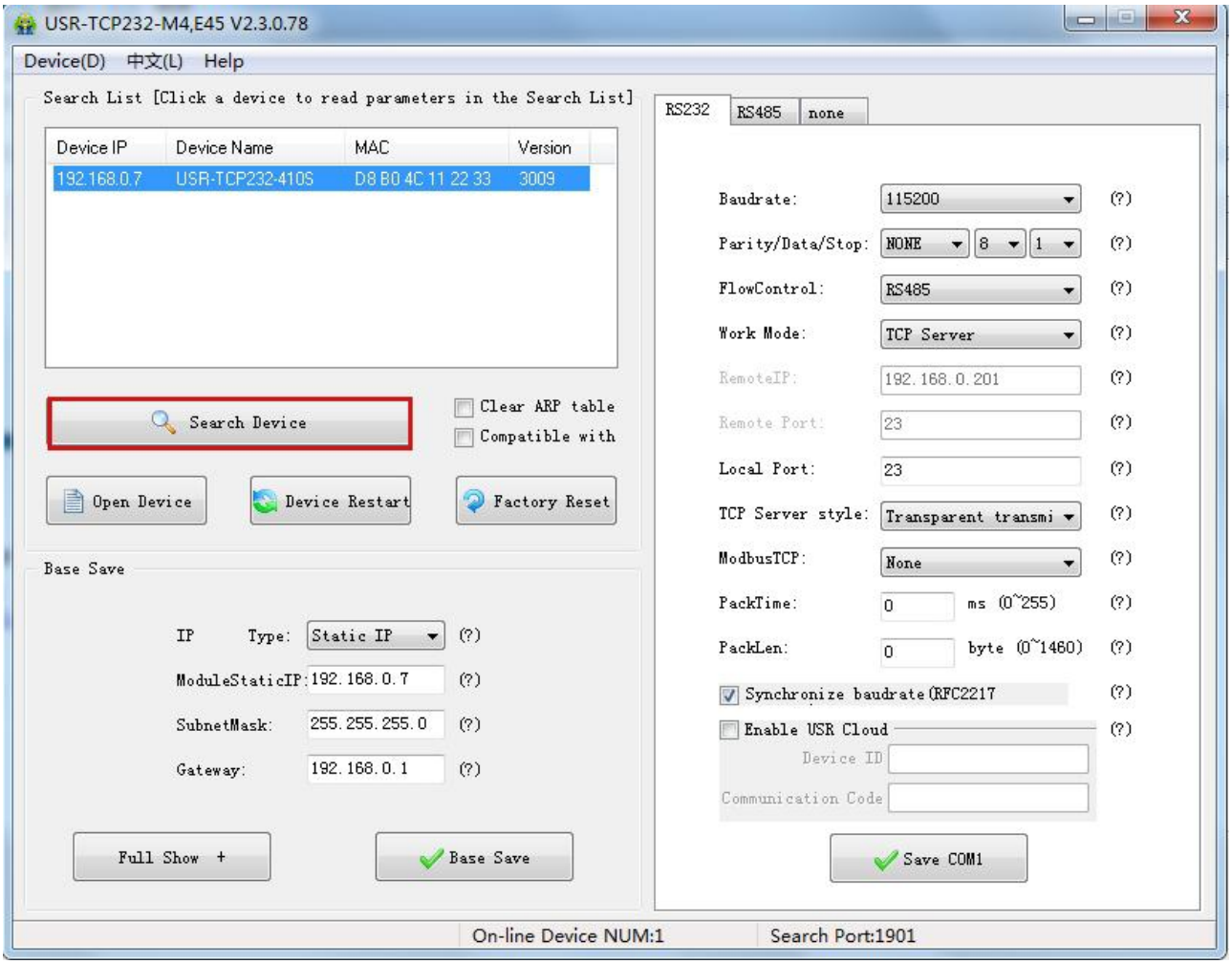
5.1 Software Configuration

To make sure setup software normal running, please check the below firstly:

1. 410S and setup software PC are within same LAN.
2. Close the anti-virus software and firewall on PC.
3. Disable network card nothing to do with this testing.

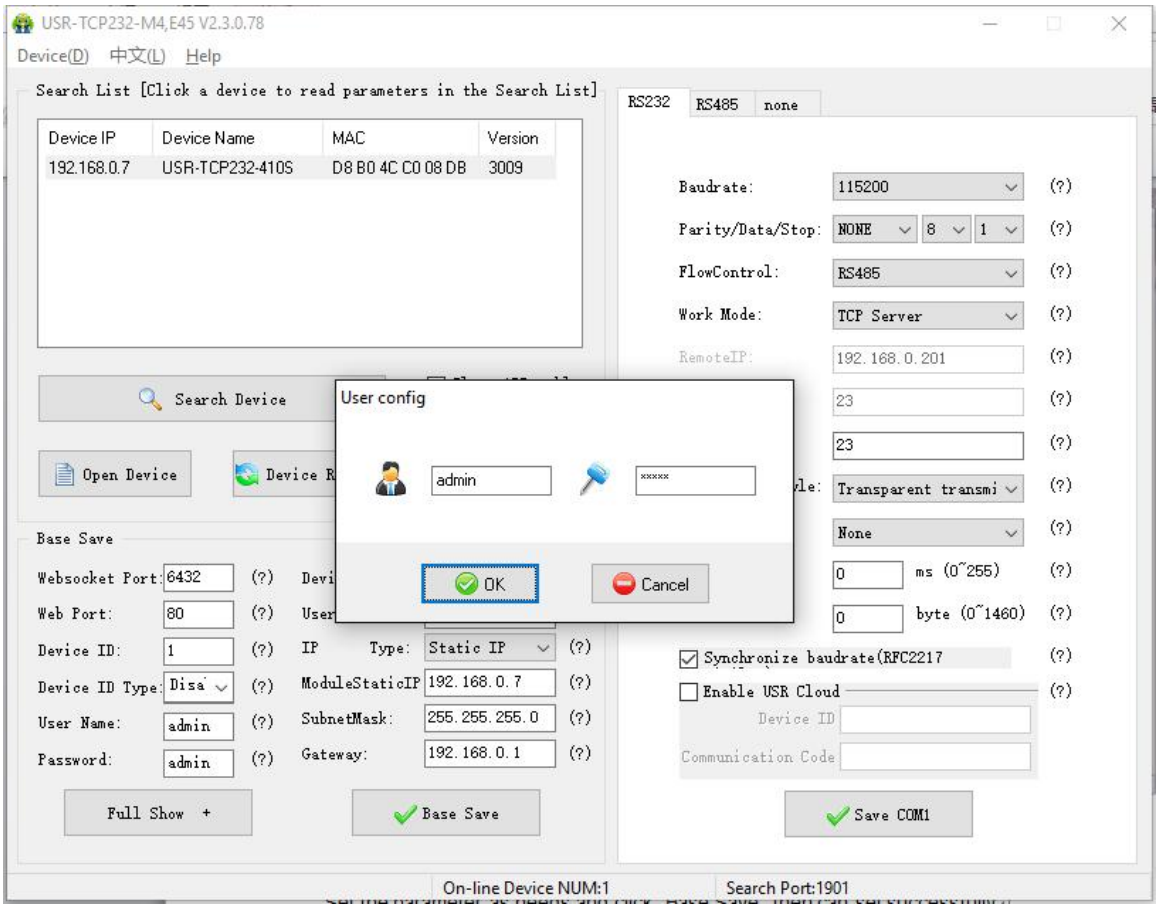
Download [USR-TCP232-M4&E45] Setup software here:
http://www.usriot.com/usr-tcp232-m4e45-setup-v2-3-0-78/

Search device and all 410S within LAN can be found. It includes IP, name, MAC and version#.



Software Configuration—Search

1. Click searched device and check user name/password. If it is correct, it reveals 410S information. If not, it pops up retype window, click “Confirm”.
   User name and password is admin by default.

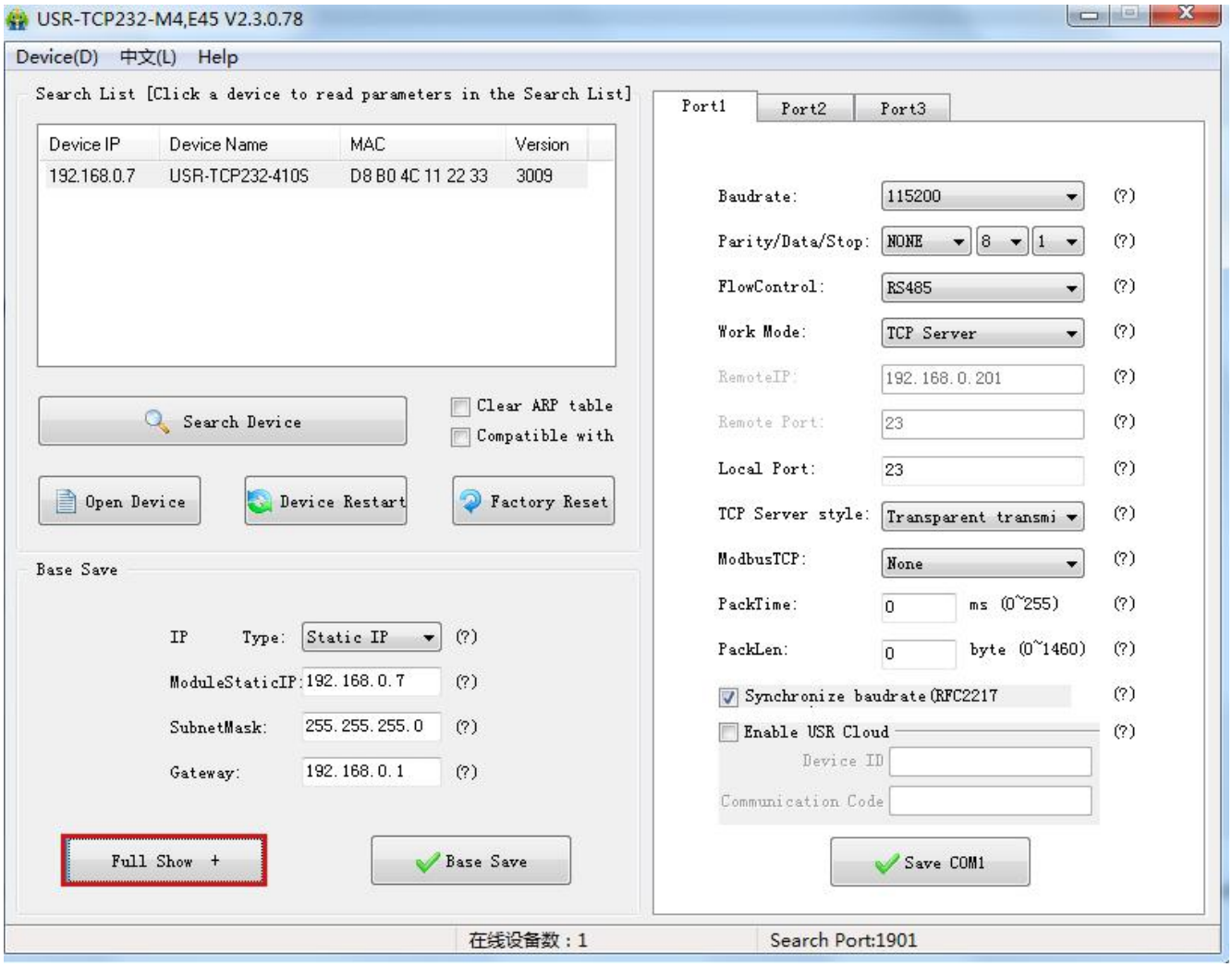


Software Configuration-Password

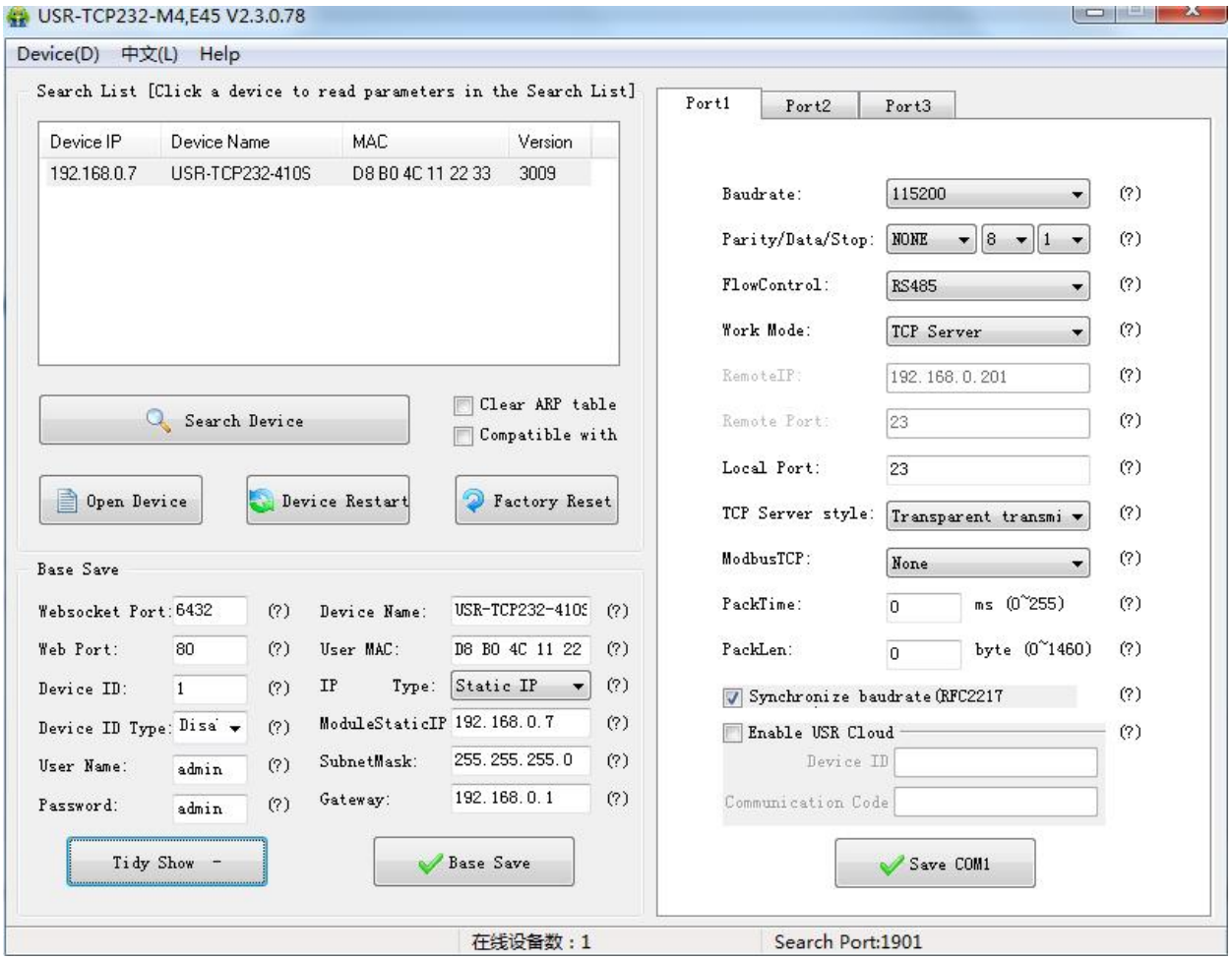
2. Basic parameter configuration

   Click “show all” and all basic parameter is revealed.

   Set the parameter as needs and click “Base Save” then can set successfully.



Software Configuration --Full Show

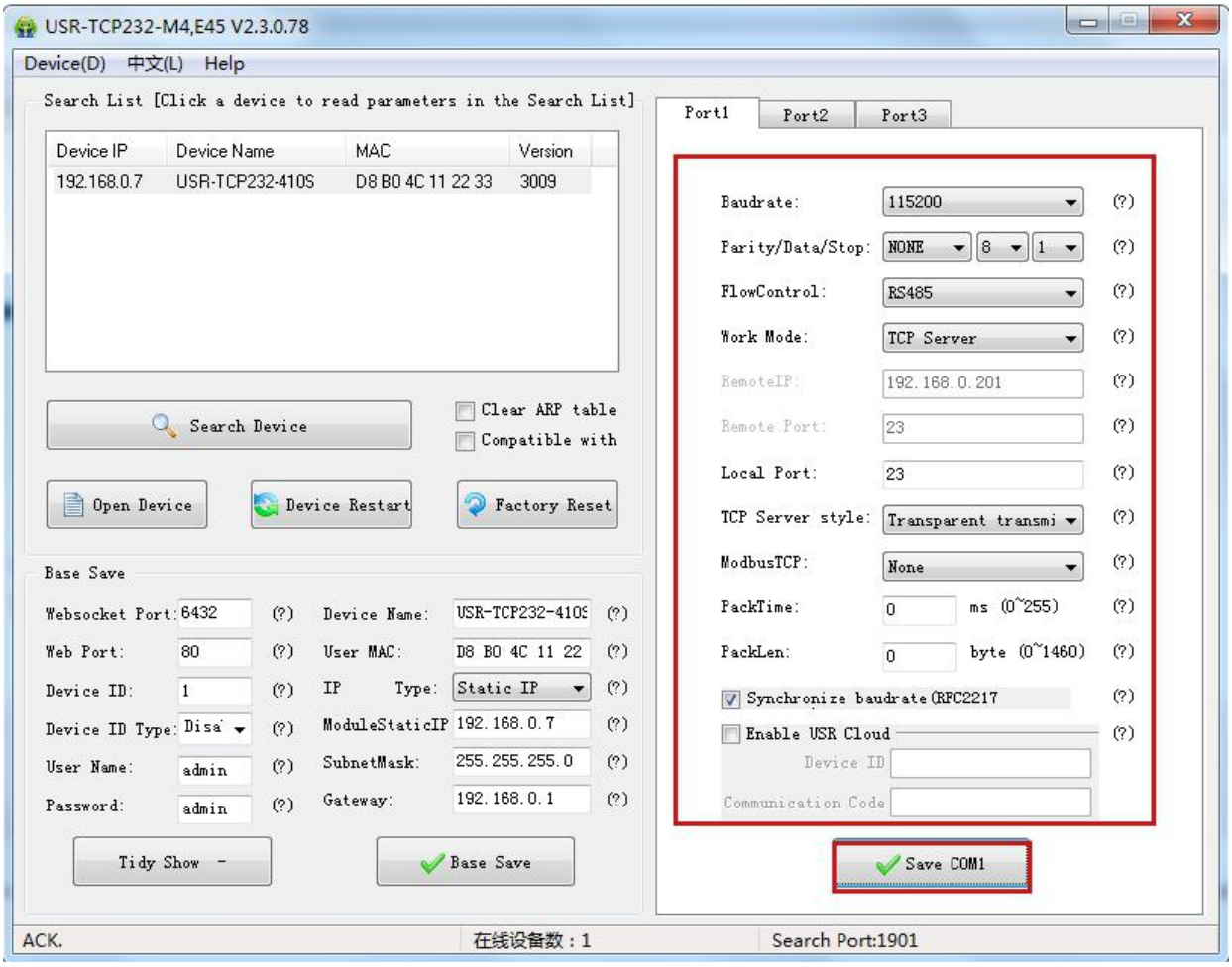


Software Configuration-Base Save

- Websocket port: refer to Chapter 4.1.8.3 Webpage to serial
- Webpage port: it is 80 by default when visit webpage.
- Device ID: refer to Chapter 4.1.8.6 Device ID
- Device ID type: sending ID type
- User name: Authentication Code for revising parameter to avoid other users within same LAN revising it.
- Password: same as user name.
- Device Name: 410S's name an be revised.
- MAC address: 410S' MAC
- IP address type: Static and DHCP
- 410S static IP: same segment with router.
- Subnet Mask: 255.255.255.0 by default.
- Gateway: it is router IP generally, can transmit cross network segment and DNS if set correctly.

3. Port n configuration(RS232/RS485 Port configuration)

Click the COM to set, revise parameter then click "Save COM1".



Software Configuration-COM 1 Configuration

Serial Baud rate: it can be standard or customized.

Parity/Data/Stop: serial parameter.

Serial Flow control: None/RS485/Hardware, None/RS485 for no flow control, Hardware for dishware flow control.

Work Mode: TCP Server /TCP Client/HTTPD Client/UDP Client/UDP Server

Destination IP/Port: IP connected when 410S works as client (TCP Client/HTTPD Client/UDP Client)

Local Port: port 410S to connect. Advice to set it to “0” when 410S works under TCP Client for connection with Random port.

TCP Server Type: No.

Modbus TCP: set this when Modbus TCP to Modbus RTU is needed.

Serial pack time: relate to serial unpacking mechanism.

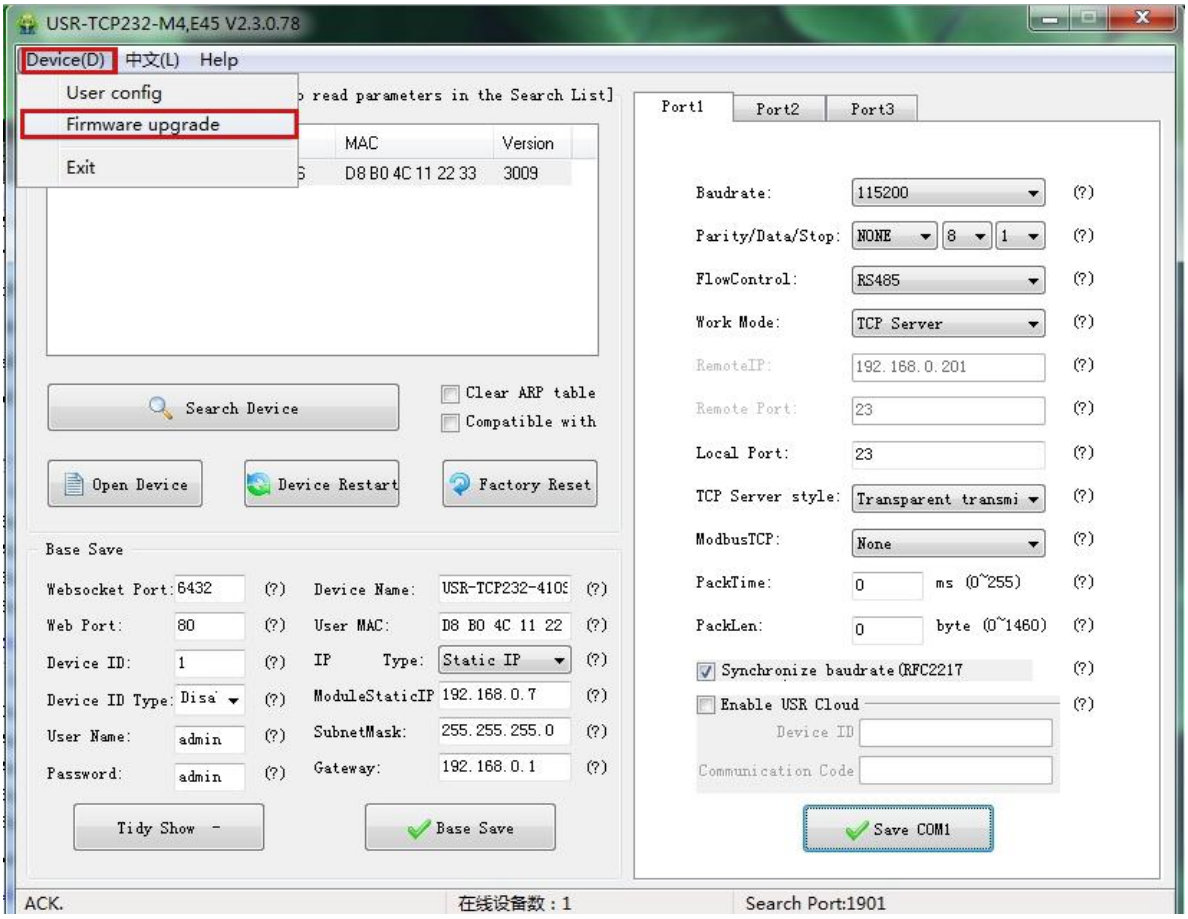
Serial pack length: relate to serial unpacking mechanism.

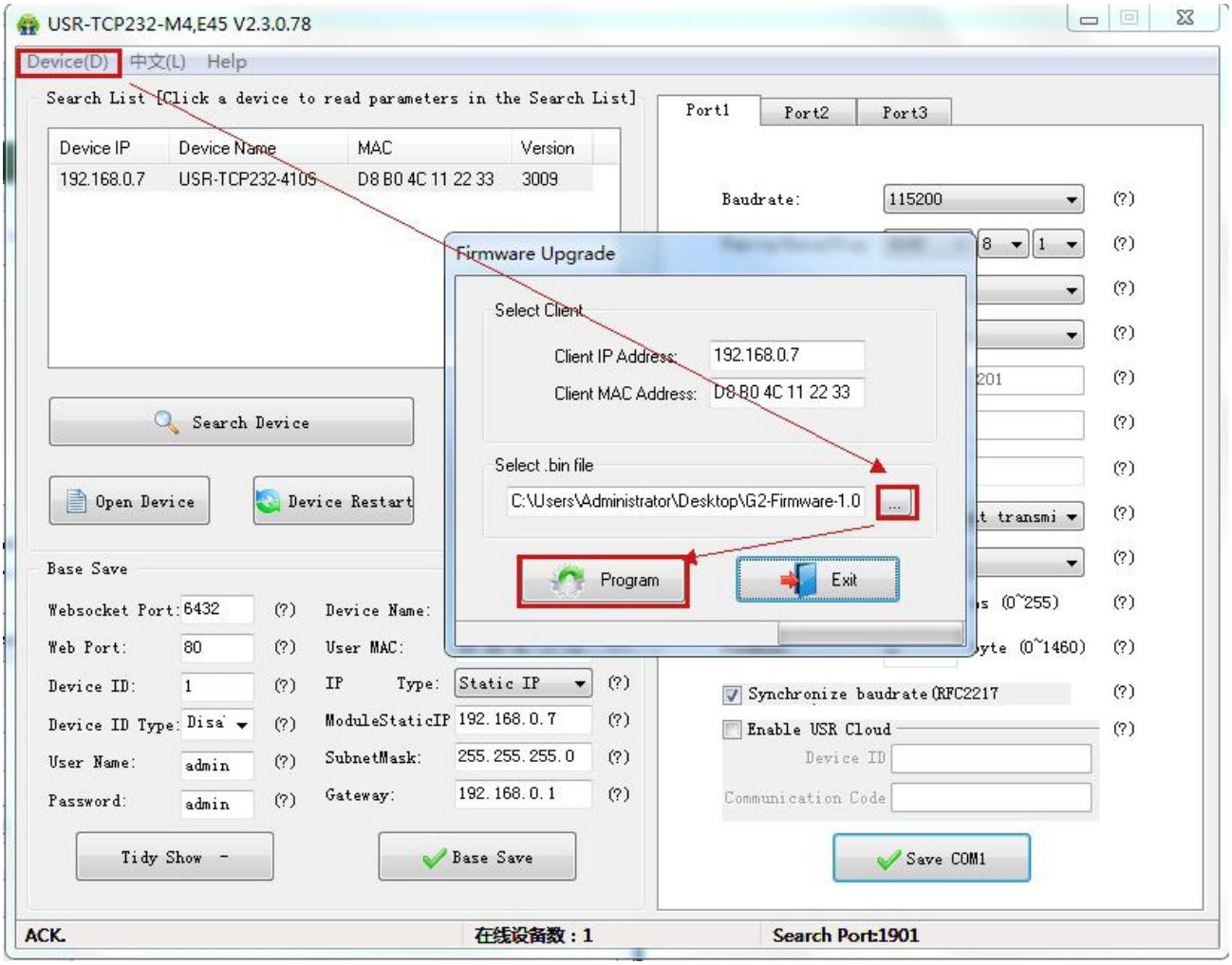
Similar RFC2217: Please refer to Chapter 4.1.8.14 Similar RFC2217

4. Firmware Upgrade

   If 410S need to upgrade with more advanced firmware, please contact USR sales.

   During firmware upgrade, 410S connects to PC directly. PC Upgrade via Wi-Fi is prohibited.

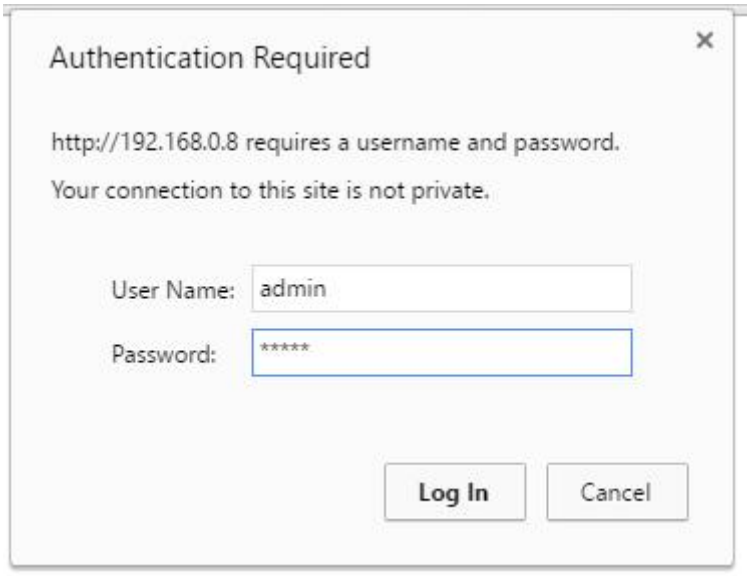

USR-TCP232-M4,E45 V2.3.0.78
Device(D)
中文(L)
Help
User config
Firmware upgrade
Exit
read parameters in the Search List]
MAC
Version
D8 B0 4C 11 22 33
3009
Search Device
Clear ARP table
Compatible with
Open Device
Device Restart
Factory Reset
Base Save
Websocket Port: 6432
Web Port: 80
Device ID: 1
Device ID Type: Disa
User Name: admin
Password: admin
Device Name: USR-TCP232-410S
User MAC: D8 B0 4C 11 22
IP Type: Static IP
ModuleStaticIP 192.168.0.7
SubnetMask: 255.255.255.0
Gateway: 192.168.0.1
Tidy Show -
Base Save
Port1
Port2
Port3
Baudrate: 115200
Parity/Data/Stop: NONE 8 1
FlowControl: RS485
Work Mode: TCP Server
RemoteIP: 192.168.0.201
Remote Port: 23
Local Port: 23
TCP Server style: Transparent transmi
ModbusTCP: None
PackTime: 0 ms (0~255)
PackLen: 0 byte (0~1460)
Synchronize baudrate(RFC2217
Enable USR Cloud
Device ID
Communication Code
Save COM1
ACK.
在线设备数：1
Search Port:1901



Firmware Upgrade

5.2 Webpage Configuration

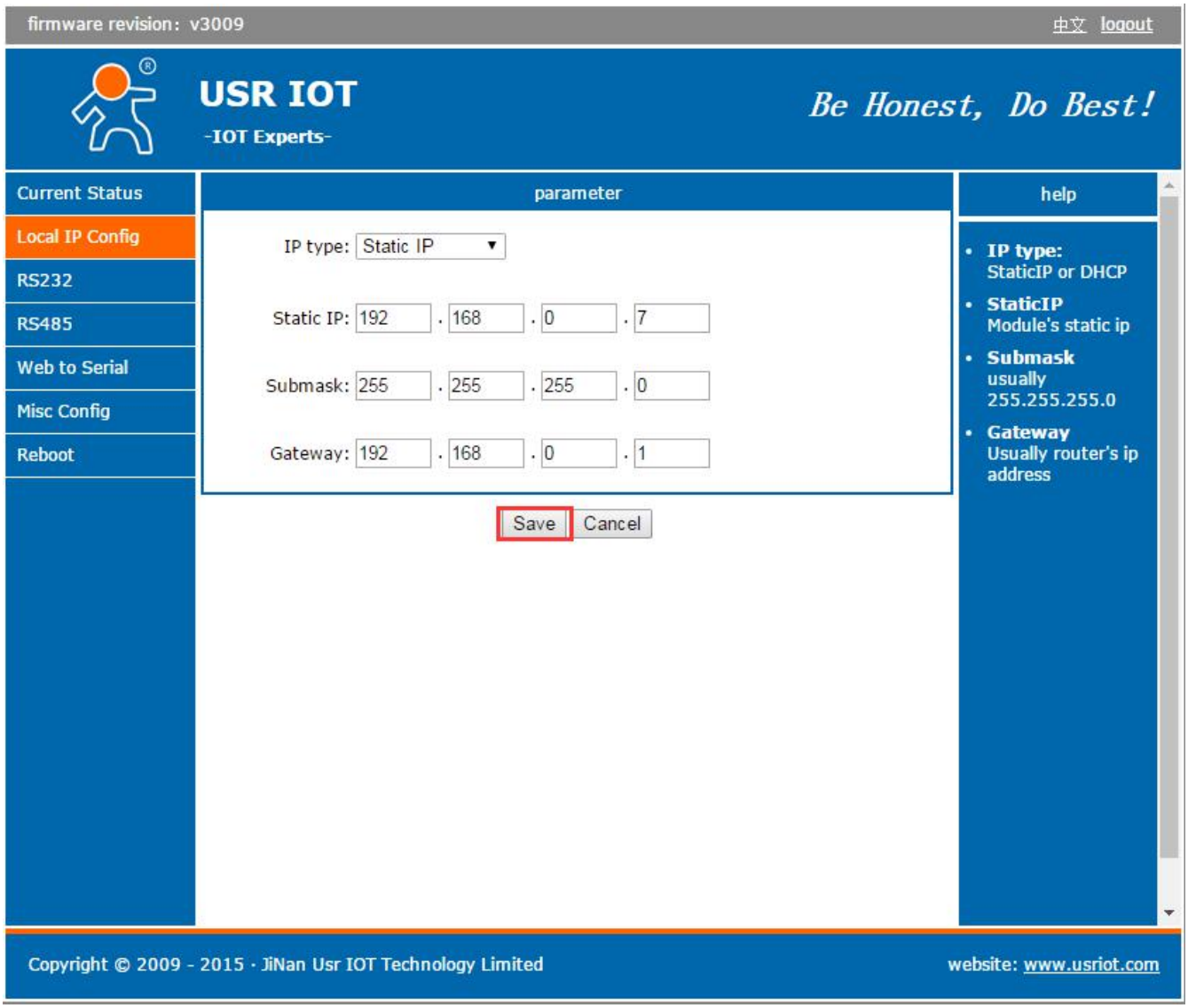
Open browser and type in 410s' IP (192.168.0.7 by default)
Then user name: admin and password: admin.



Webpage Log In

1. Current page reveals basic information:
   - 410S name
   - Firmware version
   - Current IP address
   - MAC address
   - Total running time: from be powered
   - Count of data sending: how many data sent from powered
   - Count of data receiving: how many data received from powered
   - 410S connection status: check whether connection is built.
2. Local IP configuration

   Save configuration after revise. Then restart.
   - Local IP Configuration
   - IP address gaining methods
   - Local IP
   - Subnet Mask
   - Gateway

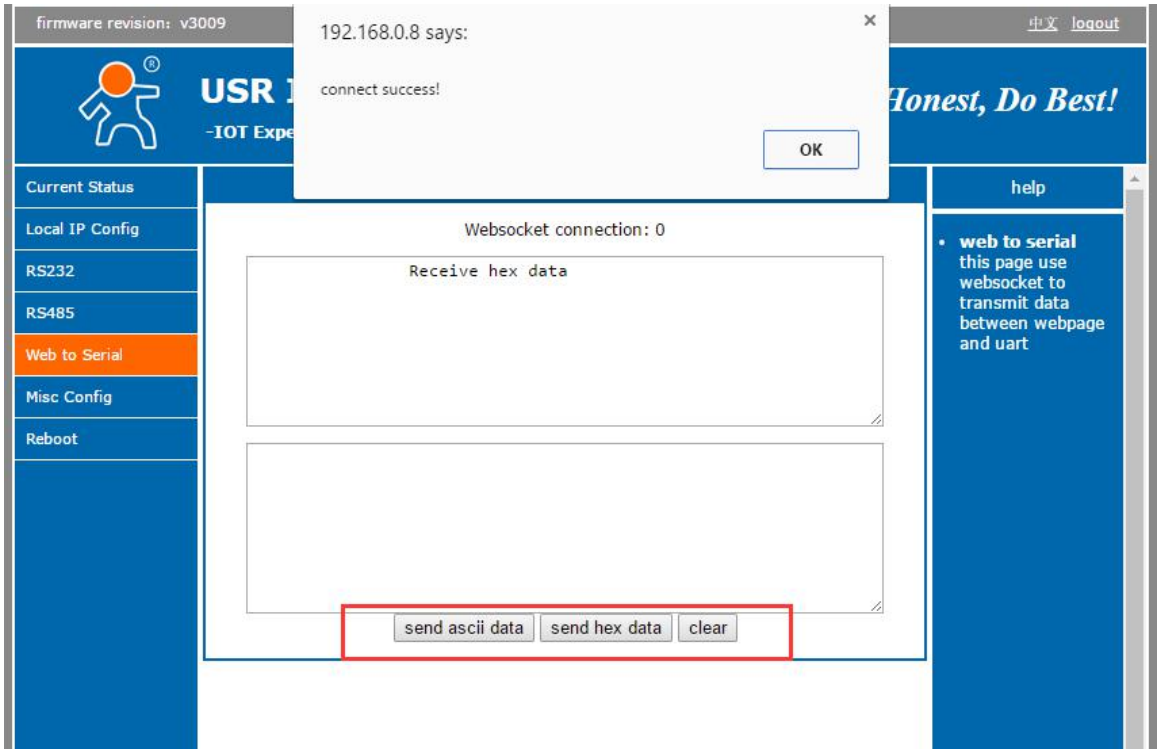


Webpage Configuration-Local IP Configuration

3. RS232
   - Baud Rate
   - Data Bit
   - Parity Bit
   - Stop Bit
   - Flow hardware and RS485
   - Local Port
   - Remote Port
   - Work Mode
   - Remote server address
   - Serial pack time
   - Serial pack length
   - Similar RCF2217
4. RS485: Same as RS232 above.

5. Web to serial

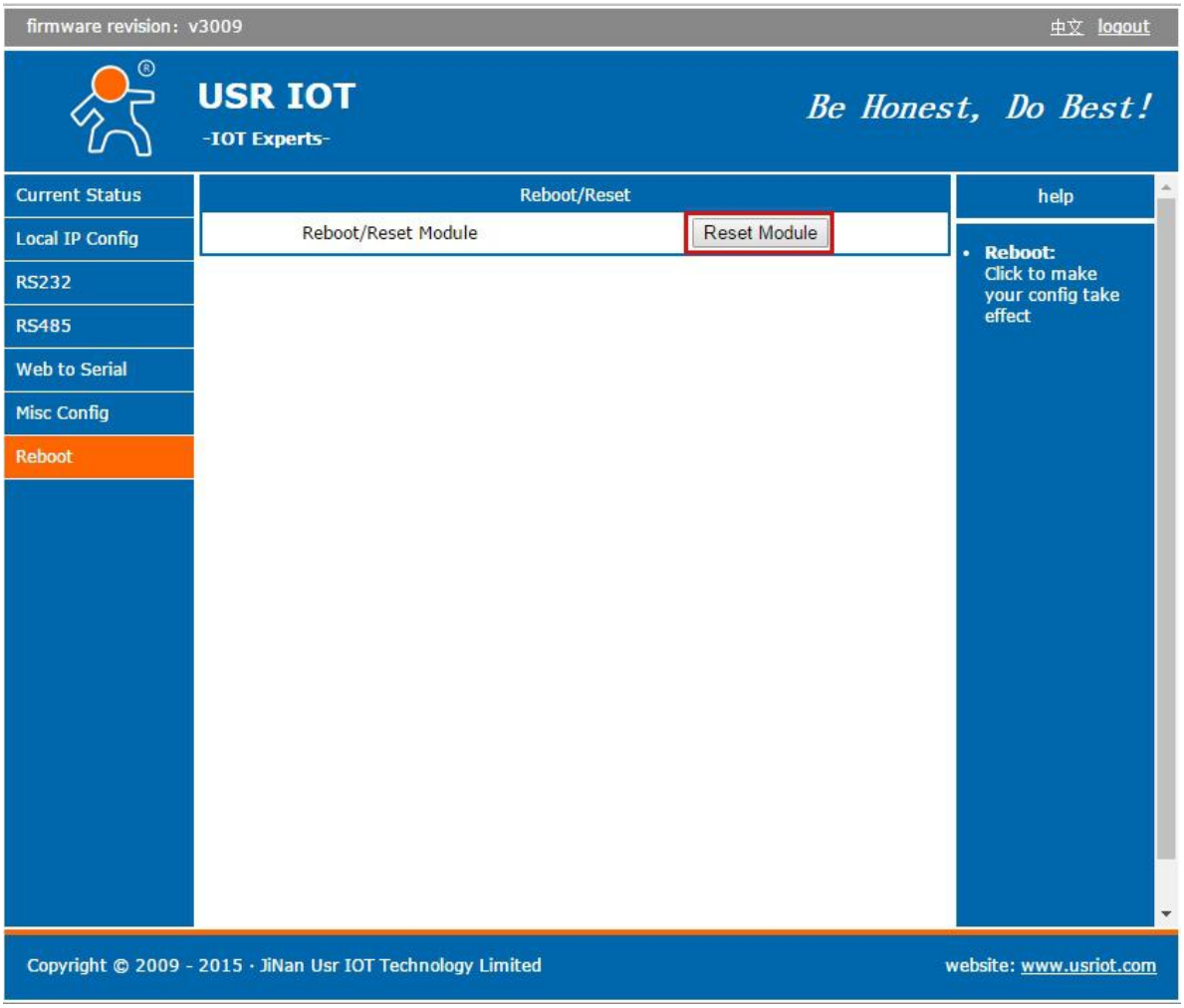
   Click “web to serial ” and “connect success” pops up. Confirm then send data.



Web to Serial

6. Advanced configuration
   - 410S Name
   - Websocket Port
   - Webpage Port
   - Device ID
   - ID Type
   - MAC Address (can be revised)
   - User Name
   - Password
   - Cache Data or not: whether serial and network data are cached if disconnection.
   - Reset time for no data: how long 410S reset when no data from COM or Network. Set to “0” then no rest.
7. Module Management

   Save all data then click restart to take effect.



Webpage configuration- Restart

5.3 Serial Configuration

Serial configuration use AT command, please refer to Chapter 4.2.1 Serial setting Protocol.

6. Contact

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