ZLSN7004

High-performance

Serial Port to WIFI/Ethernet

Core Module

Document DI: ZL DUI 2015.3.20.1.0

Version Information

The History of the revision to this document:

History

Date	Version	Document ID	Revising content
2015-3-20	Rev.1	ZLDUI 2015.3.20.1.0	Release
2015-11-24	Rev.2	ZLDUI 2015.3.20.1.0	

Content

1. Summary

ZLAN7004 is a high-performance wifi/Ethernet to serial port module developed by Shanghai ZLAN. Different with the normal wifi module positing in low cost, 7004 posit in high-performance, abundant functions, the design goal is oriented to industrial field with high requirements for function and stability.

7004 is developed on the basis of over 10 years product design experience and software technology accumulation in TCP/IP to serial port field by Shanghai ZLAN. The software system is same as ZLSN2002 Ethernet to serial port product, and has same stability and rich function as ZLSN2002.

Figure 1 ZLSN7004 with Antenna

7004 use 11pin + 12pin dual-pin structure, the appearance is compatible with ZLSN2002 with power supply 3.3V. The serial port connect user device TTL level port through RXD, TXD, GND of 3 pin UART, the other end connect through WiFi or Ethernet. The WiFi supports STA mode connecting wireless router, or as AP mode to make WiFi devices as phone connect. The module has network transformer, user can use RJ45 with network transformer directly connect with the module Ethernet port.

ZLSN7004 can be applied to security monitoring, intelligrid, factory automation, energy environment detection, intelligent transportation, intelligent household and other field, it can make your system immediately upgraded to WiFi.

2. Feature

1) Support Ethernet and WIFI simultaneous access.
2) The internal integrate real-time operating system, fast start.
3) The serial port has real-time response speed. The packet frame interval is adjustable 1~255ms. The kindred WiFi module can only reach minimum 20ms or 100ms frame ability, but 7004 can reach 1ms real-time frame performance.
4) One-key search configuration. When forget SSID or password the WiFi cannot find module, just plug in cable, use ZLAN ZLVircom tool can immediately find module and can configure parameters of WiFi, network even they are not in a same segment. Also provide Web configuration method.
5) Provide reset button. Can reset WiFi parameter and IP address of module.
6) Provide 4 kinds LINK indicator interface.
7) WiFi support connection in pairs between modules.
8) Support 485_TEN pin, convenient to connect with MAX485 and such RS485 external chip.
9) No packet loss: in TCP mode, either WiFi or Ethernet port receiving or sending data in maximum rate 115200bps will not loss 1 bit.
10) Provide serial port control command, can configure multiple parameters one time.
11) Support DNS, support as a DHCP client, as an AP mode can also be as a DHCP Server.
12) Support upgrading program through Ethernet port in system. Support remote network upgrades, automatic restart after upgrade without manual intervention.
13) Support configuring WEB custom download. Can be configured to the user's own web pages.
14) Provide advanced function modules: 7044 support Modbus TCP converting to RTU and multiple host access to wifi Modbus gateway module. 7004N is a wifi

module supporting p2p.

15) Support hardware flow control CTS/RTS and software flow control XON/XOFF.

16) Support TCP sever, TCP client, UDP/UDP multicast. Support up to 100 TCP connections communicating with network module when as Server; can connect to 8 destination IP when as Client.

3. Hardware

Figure 2 ZLSN7004

3.1 PIN Function

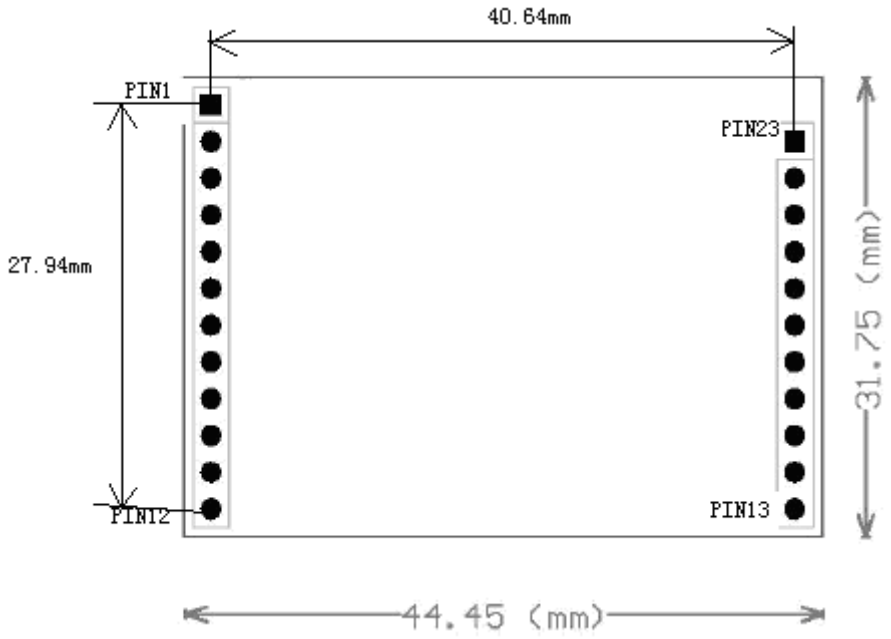

Figure 3 ZLSN7004 row-pin interface

The pin pitch is 2.54mm, the pin definition are shown as below:

Table 1 PIN Definition of ZLSN7004

PIN	Signal	Direction	PIN	Signal	Direction
1	ETHER_TX+	OUT			
2	ETHER_TX-	OUT	23	RTS	OUT
3	ETHER_RX+	IN	22	CTS	IN
4	ETHER_RX-	IN	21	DEF	IN
5	RESERVE1	/	20	MODE	IN
6	TXD	OUT	19	100M_LINK	OUT
7	RXD	IN	18	WIFI_LINK	OUT
8	485_TXD_EN	OUT	17	WIFI_WORK	OUT
9	RESERVE2	/	16	TCP_LINK	OUT
10	nRST	IN	15	ACT	OUT
11	GND	IN	14	VCC(+3.3V)	IN
12	GND	IN	13	VCC(+3.3V)	IN

Table 2 PIN Instruction of ZLSN7004

PIN Name	Type	PIN No.	Instruction
Power, Reset			

GND	POWER	11、12	GND
VCC	POWER	13、14	VCC+3.3V power
nRST	IN	10	When nRST in low level, reset chip. The input reset level is less than 0.8V, and the low level must be greater than 5ms.
Ethernet Pin			
ETHER_RX-、ETHER_RX+	IN	3、4	Ethernet receiving, needs to through transformer
ETHER_TX+、ETHER_TX-	OUT	1、2	Ethernet sending, needs to through transformer
Serial port Pin			
RXD,TXD	IN/OUT	7、6	3.3V TTL level, serial port input/output pin, can directly connect with MCU port. Note that RXD connect user MCU TXD, TXD connect user MCU RXD.
CTS	IN	22	Hardware flow control input, when chip configured as CTS/RTS, DSR/DTR mode, only CTS=0 the chip port will output data.
RTS	OUT	23	(1) RTS=1 at startup. After the system has been started, and 100M_LINK, WIFI_LINK at least 0, RTS= 0. (2) Flow control set as CTS/RTS, DTR/DSR, normally RTS=0, when RTS=1 means ZLAN7004 cannot receive data, user MCU should stop to send data to ZLAN7004. The reason ZLAN7004 cannot receive data including: module in initialization, Wifi Ethernet connection no built, the receiving buffer of ZLAN7004 port is full.
Input & Output			
TCP_LINK	OUT	16	At 0, it indicates that the module has established the TCP connection (or in UDP mode) with the network server, and the network connection is normal, so the module can send and receive data normally. If the cable is unplugged at this point, the LINK will become 1. Connecting the negative pole of led light by 1K resistance.
100M_LINK	OUT	19	If the line is connected, output low level, or else output high level. Connecting the negative pole of led light by 1K resistance.

WIFI_WORK	OUT	17	When the Wifi part starts to work, if this PIN connects to LED through a 1K resistor, the LED will flicker. ➢ STA mode, access points can't find: out for 5 seconds then continuously flashes 3 times. ➢ STA mode, access points found and in connecting: continuous flashing once every 0.2 seconds. ➢ STA mode, connection established: irregularly flashing may once every 1 second. ➢ AP mode in connection (or access Ethernet): regular flashes once every 0.6 seconds. ➢ AP mode not connected and no Ethernet: regularly flashing once every 2 seconds.
WIFI_LINK	OUT	18	For either the AP or STA mode, the WIFI_LINK output low level as long as there are other wifi devices established wifi connection with ZLSN7004, can be connected to the LED by 1K resistance.
ACT	OUT	15	When 0, means ZLAN1003 port has data transceiver. But the pin will be in change between 0 and 1 when there has data, ACT=1, cannot be sign of non-data communication. Connecting the negative pole of led light by 1K resistance.
DEF	IN	21	When be 0 and time keep over 1s, the module will restart with default IP in static mode, Gateway 255.255.255.0, 192.168.1.1. This is avail for user forgot IP, can reset it to default.
485_TEN	OUT	8	485 sending control end, normal 0, when sending data to serial port will be 1. Can directly connect TXD_EN pin of MAX485 chip.
RESERVE1 、RESERVE2 、MODE	/	5、9、20	Reserved for later extension.

Note: the pins users do not use please hang them.

3.2 Recommended Circuit Diagram

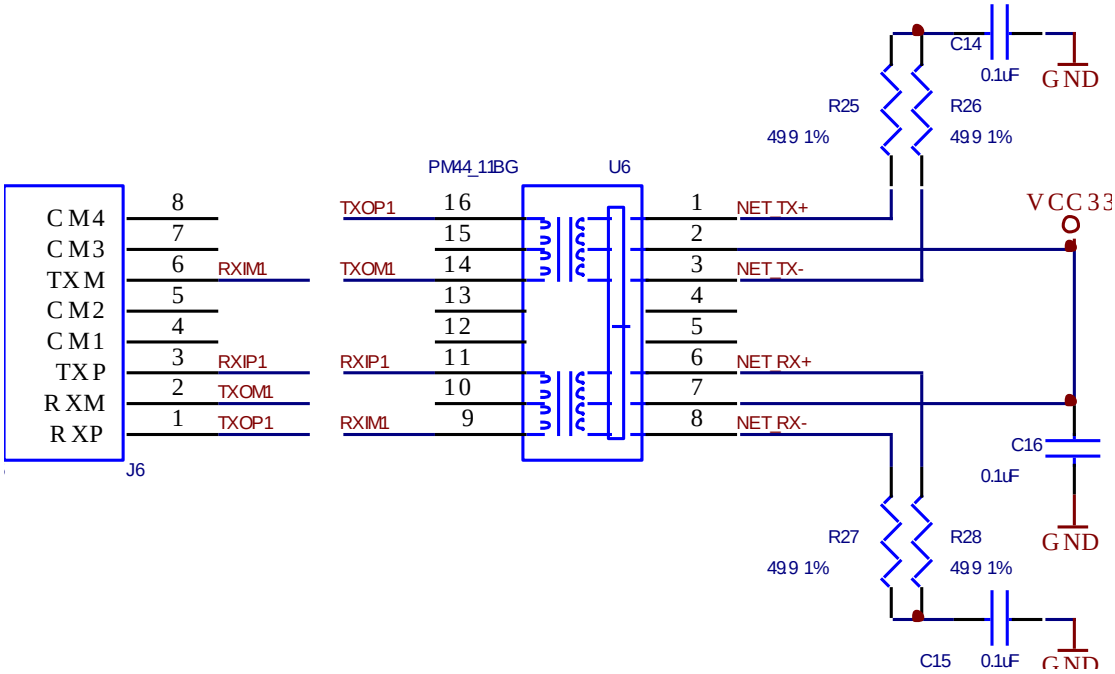

Figure 4 4 cables of NET_TX+, etc. Connection Style

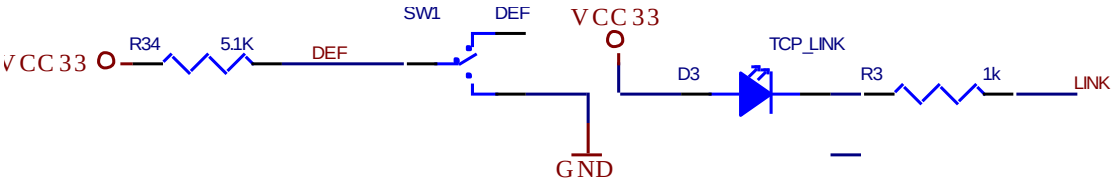

Figure 5 Reset PIN and LED Elicitation Method

3.3 Compatible with ZLSN2002

ZLSN7004 is compatible with ZLSN2002 in pin and size, which can be changed from ZLSN2002 directly to 7004 and upgraded from Ethernet to wifi. Please note the following questions:

1) ZLSN2002 is divided into two modules: 3.3V and 5V, and the 7004 has only one module of 3.3V power supply. Please confirm that the power supply voltage of the base board to 7004 is 3.3 V.

2) The ZLSN2002 core module has network transformer, and 7004 needs to add the network transformer on the base board. ZLSN2002 will connect the network wire directly not through network transformer after the direct replacement of 7004. Although Ethernet communication can be carried out in this way, there is a problem of signal interference and un-isolation. It is not

recommended to use this method for a long time. But the use of wifi only, can be used directly without network cable in.

4. Technical parameter

Figure	
Interface:	23 pins dual-pin permutation
Size:	44.45mm×31.75mm
Serial Port Parameter	
Electronic	TTL×1：RXD, TXD, GND, interface TTL 3.3V
Baud rate:	1200~115200bps
Parity:	None, Odd, Even, Mark, Space
Data size:	5~9
Flow control:	RTS/CTS, DSR/DTR, XON/XOFF, NONE
WLAN	
WLAN Standard:	802.11 b/g
Frequency Range	2.412GHz-2.484GHz
Transmit Power	802.11b: +20dBm (Max.); 802.11g: +18dBm (Max.)
Receiving Sensitivity	802.11b: -89dBm; 802.11g: -81dBm
Antenna Choice	External: external antenna
Hardware	
Ethernet	10M/100M
Power	Invoking Ethernet: 3.3V. <280mA when data transmission
Work Temperature	-40~85℃
Storage Temperature	-45~125℃
Software	
WLAN Work Mode	STA/AP
Security Mechanism	WEP/WPA-PSK/WPA2-PSK
Encryption Type	WEP64/WEP128/TKIP/AES

Protocol	TCP/UDP/ARP/ICMP/DHCP/DNS/HTTP
Communication method:	Socket, virtual serial port
User Configuration	Web Server, Windows configuration tool ZLVircom

5. Wifi Function

5.1 AP Mode

Do not plug the cable, put 7004 power on. After a while you can see WIFI_WORK light began to flash, indicating the wifi function has been normal. By default 7004 is in AP mode and SSID is "ZLAN". See "ZLAN" in the wifi list of PC, connect the wifi.

Figure 6 Search for ZLAN hotspots

After connecting the laptop, you can automatically get an IP address from 7004. Click ZLVircom software "Device Manage" button, you can see a line in the device list, found 7004 device.

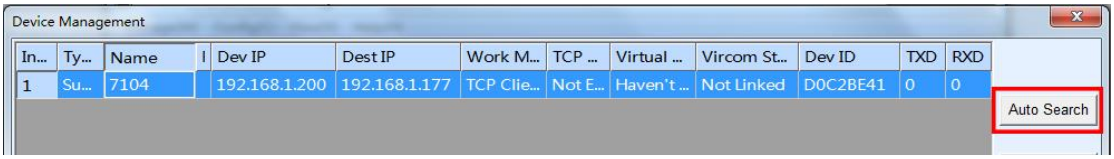

Figure 7 Search for 7004 Device

Double-click the line to open the Device Parameter Edit dialog box.

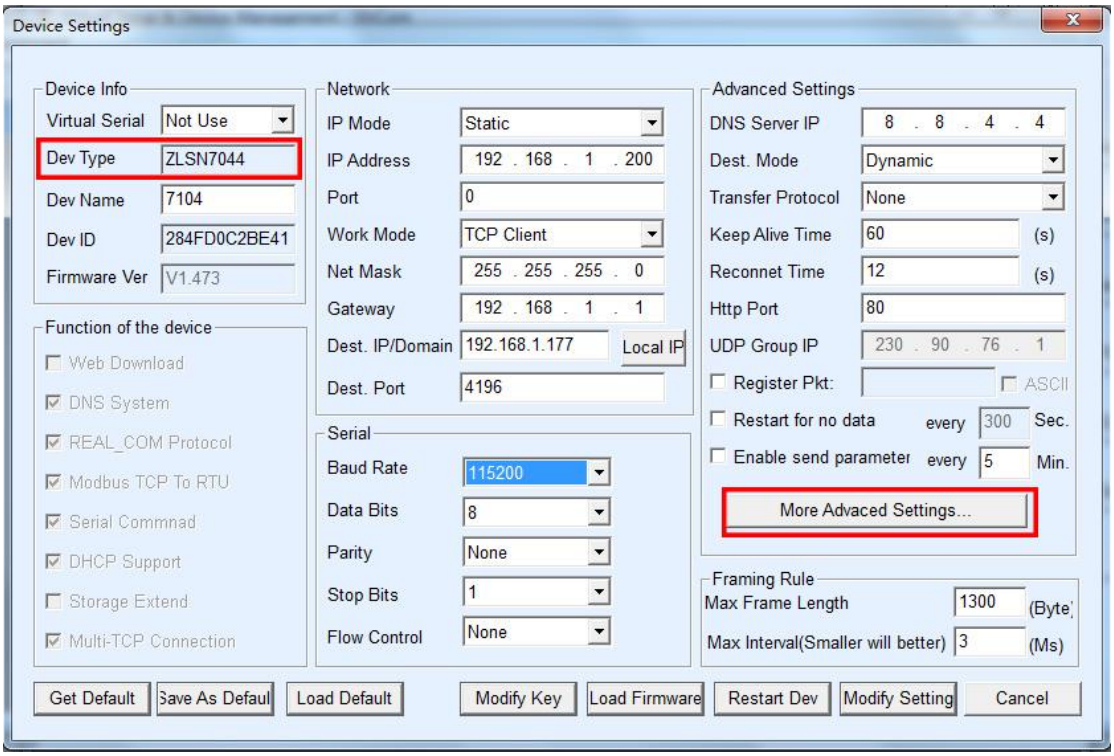

Figure 8 Device Parameter Settings dialog box

Here you can see one of the device model ZLAN7004, ZLSN7044 and so on. Here you can also configure the IP address and baud rate, the meaning of these parameters will introduce after. Please click on "More Advanced Settings", you can configure the 7004 wifi parameters in the open dialog box.

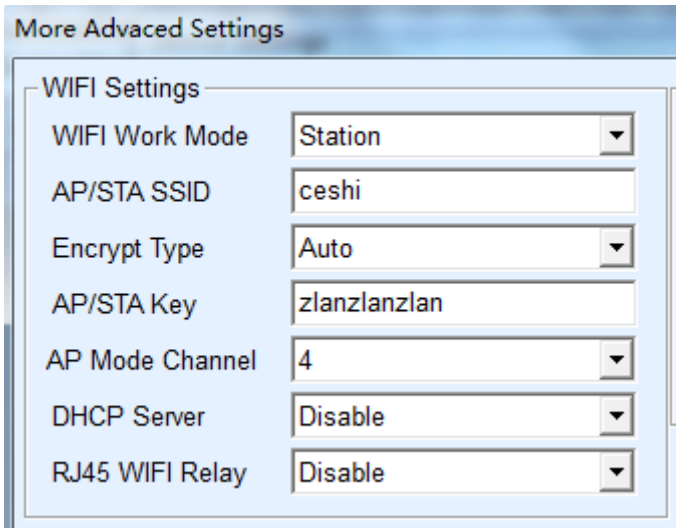

Figure 9 Wifi Parameter Configuration

The meanings of the WIFI parameter are as follows:

Name	**Option Values**	**Instruction**
WIFI Work Mode	➢ Wireless AP: 7004 can be as a hotspot to be connected by notebooks, mobile phones, etc., mainly for using the configuration in the first time. ➢ Wireless Station: As STA mode, 7004 will actively connect a hot spot (such as a router).	
AP or STA SSID	A string of 32 bytes or less	As an AP, this SSID is the hotspot name, when as STA mode, it is the SSID of the pre-connected hotspot. When changing from STA to AP mode, please pay attention to modify the SSID, otherwise it will conflict with the existing SSID on the network.
Encryption type	➢ No encryption: no password mode ➢ WEP64: Password length must be 5 characters. ➢ WEP128: Password length must be 13 characters. ➢ TKIP: TKIP encryption, password 1 to 32 bytes. ➢ AES: AES encryption, password 1 to 32 bytes. ➢ Automatic: usually routers use one	

	of TKIP and AES, when the user is not sure, you can choose automatic mode.	
AP or STA Password	Different password length according to the type of encryption	As AP mode, this password is the password of computer, mobile phone connecting to 7004. When used as STA mode, this password is the pre-connected AP password.

If the 7004 as AP mode, it has two types password and no password. No password mode you just select "no encryption" type; password method is recommended to use WEP128 encryption, the password length is of 13 bytes.

5.2 STA Mode

When the STA mode is used, the user enters the SSID, encryption mode, and password of the pre-connected router in FIG. 9. When you do not know the router's encryption mode can choose "automatic" mode.

When the STA mode is used, 7004 will automatically connect to the AP hotspot after power-on. At this time, the WIFI_WORK light is flashing quickly, indicating that it is in the connecting state. WIFI_LINK lights will be on when the connection is established.

STA mode support automatic reconnection, such as AP hot restart, 7004 can automatically connect. If you cannot connect to the AP hotspot, please confirm that whether the encryption mode, password, SSID is correct, whether the antenna is installed, whether in the signal range.

5.3 Ethernet Search

One of the advantages of 7004 is having wifi and Ethernet at the same time. At any time when you cannot determine the7004 wifi parameters, cannot connect to the 7004, you can use one-key searching module of ZLVircom by plugging in network cable, configuring the required wifi parameters.

5.4 Wifi Connection in pairs

7004 support 2 modules via wifi interconnect. Interconnection configuration parameters are as follows:

Parameters	**Module as AP**	**Module as STA**
WIFI Work Mode	Wireless AP	Wireless Station
AP or STA SSID	Same	Same
Encryption Type	Recommended as “no encryption" or WEP128	Recommended as “no encryption" or WEP128
AP or STA Password	Same	Same

When the 2 7004 establish connection via wifi, WIFI_LINK light will be on.

5.5 Wifi Signal Test

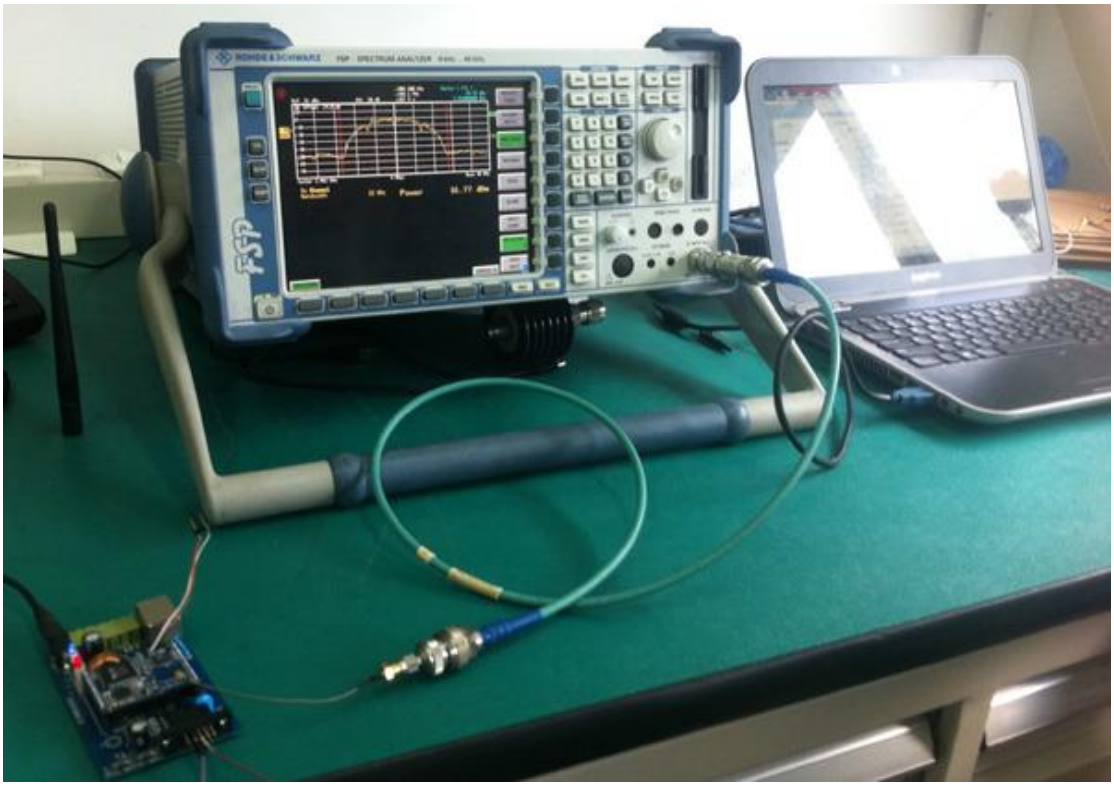

Figure 10 7004 Signal Test

The test instrument 7004 using is ROHDE & SCHWARZ 9k~40GHz spectrum analyzer.

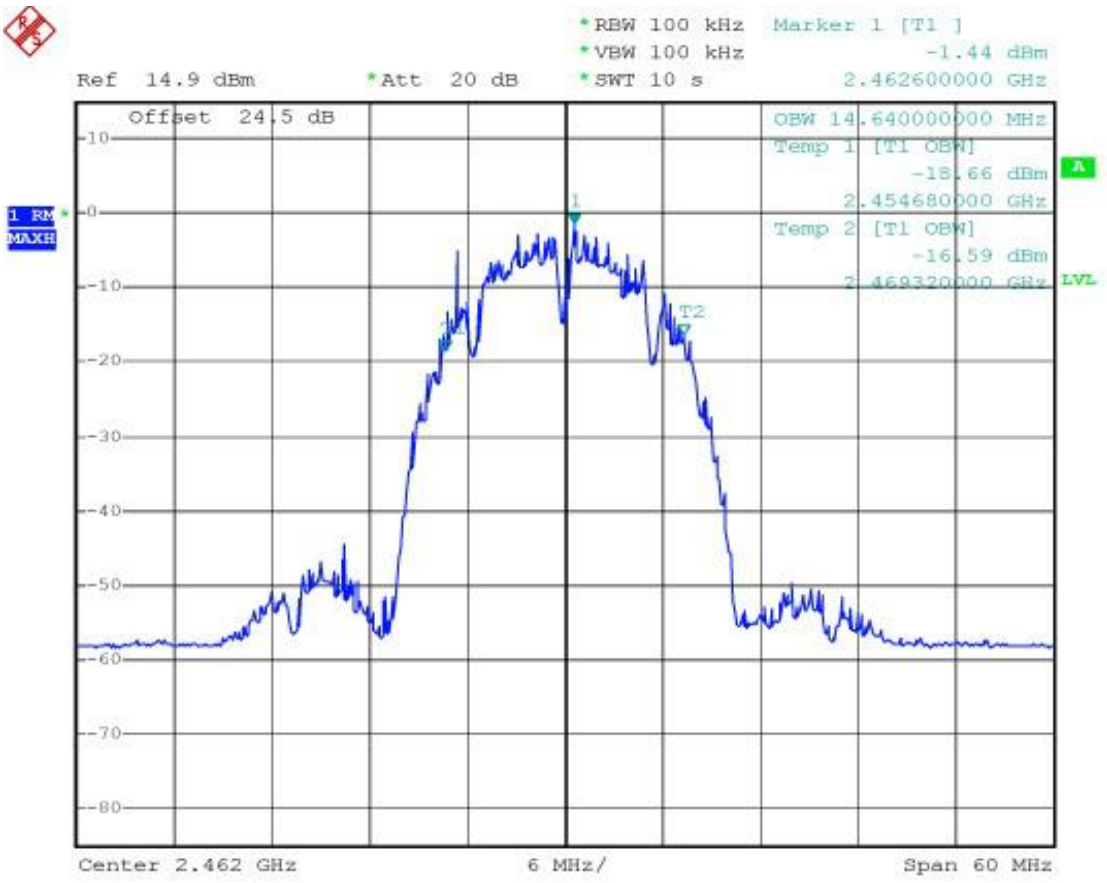

Figure 11 7004 Bandwidth Test Curve

From the bandwidth test curve, 7004's bandwidth is in the 20M range, will not interference the adjacent channel signal.

Figure 12 7004 Power Test Curve

From the power test curve, you can see the transmit power in the range of two test points is 17.34 dBm. Meet the requirements of the standard wifi signal transmission power.

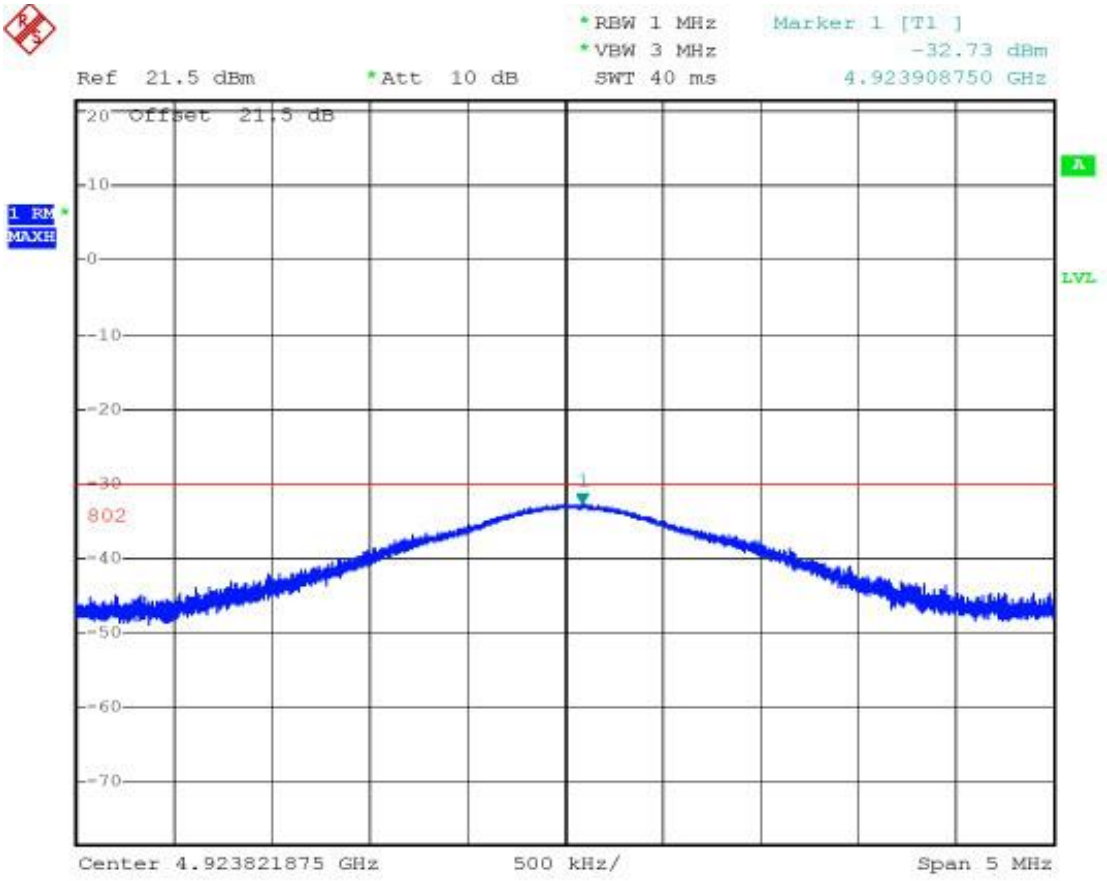

Figure 13 7004 Stray Test Curve

From the stray test of the 7004, the spurs in the vicinity of double-frequency 5GHz are less than -30dB, in line with the requirements of radio spurious radiation.

5.6 Antenna Choose

If you choose to use the built-in antenna module, no need external antenna, if you need an external antenna you need to meet the following characteristics, ZLAN can provide external antenna.

Impedance	50 Ohm
Return loss	-10dB(Max)

Connector type	I-PEX
Frequency Range	2.4～2.5GHz
VSWR	2 (Max)

6. Parameters Configuration

6.1 Parameter Meaning

Please use ZLVircom4.53 or advanced version to configure the 7004. When 7004 access network via the Ethernet port or wifi, the computers in same LAN can search the device through installing ZLVircom tool.

After searching there will pop-up dialog box as shown in FIG 8. The parameters are stored in the flash space of networking products, it will load with power-on, will not loss with power-off. The meaning of the parameters is described as follows:

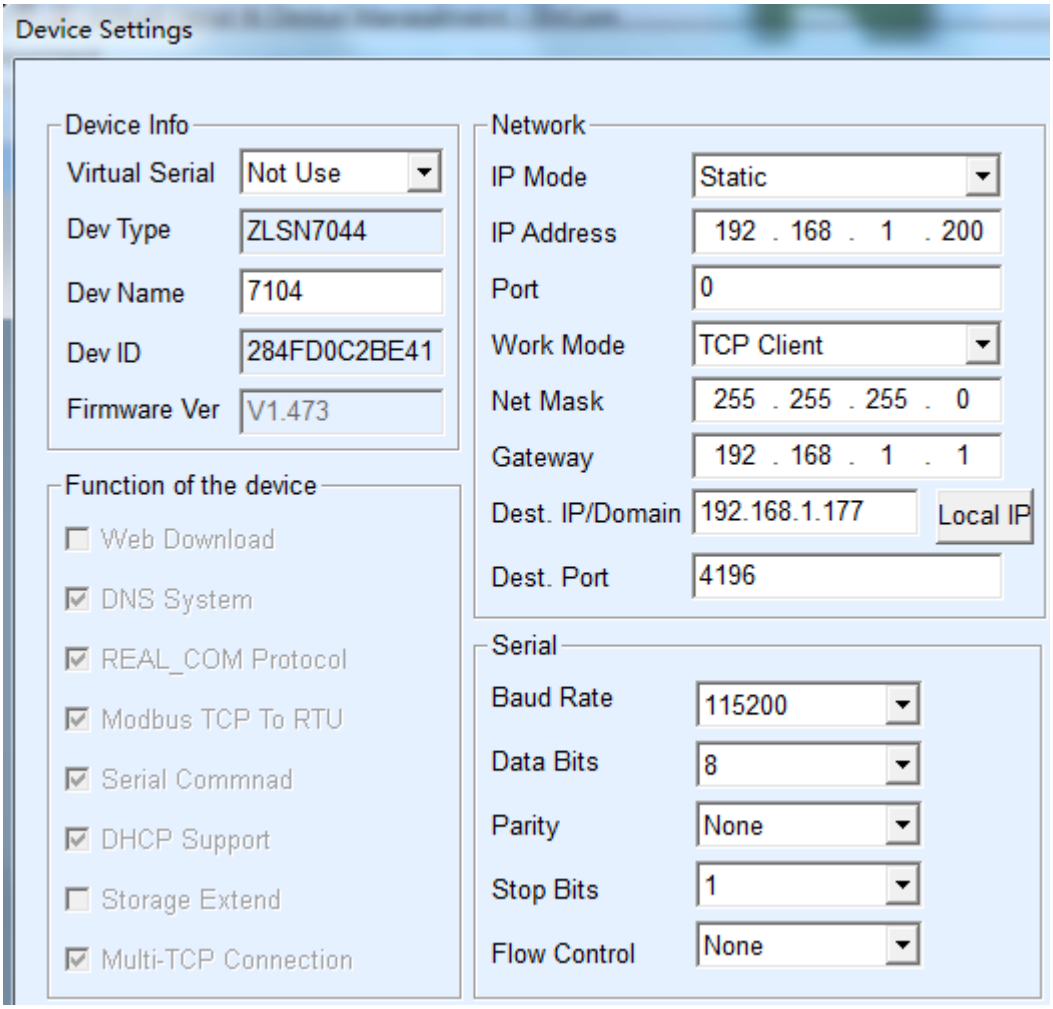

Figure 14 Basic Parameters

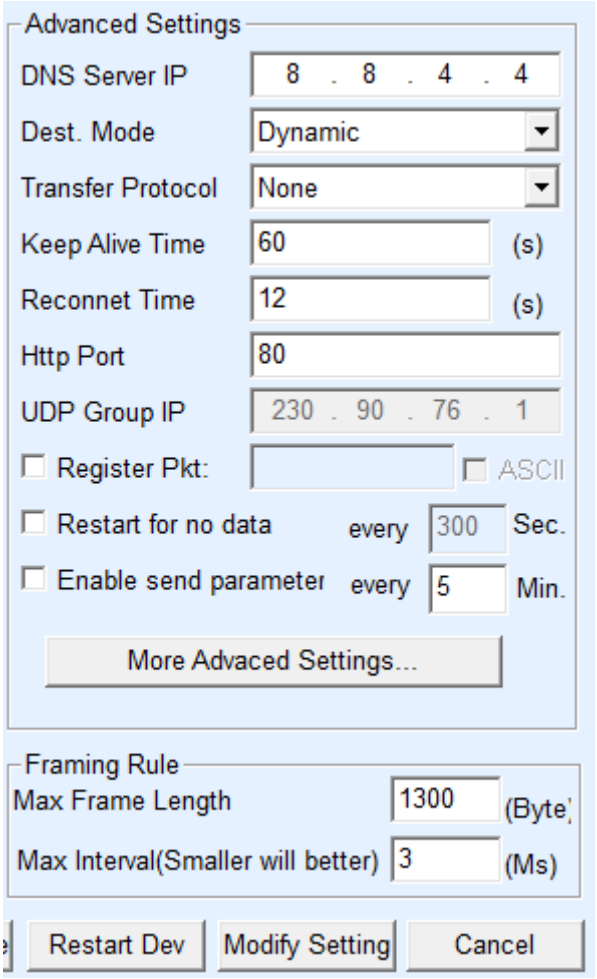

Figure 15 Advanced Parameters

The meaning of the parameters is as follows:

Table 2 Parameter Meaning

Parameter Name	**Value Range**	**Instruction**
Virtual Serial	Non-in use, created virtual serial port	You can bind the current device to a created virtual serial port.
Dev Type	ZLAN7004, ZLSN7044, ZLAN7004N, ZLSN7044N, etc.	Show only the model of the core module
Dev Name	Any	You can give the device a readable name, with a maximum of 9 bytes, and support the Chinese name.
Dev ID		The factory's sole ID, cannot be modified.
Firmware		The firmware version of core module

Version		
Supporting Function		Please refer to <User Guide of Networking Products> http://www.zlmcu.com/download/serial_server_user_manual.pdf
IP Mode	Static, DHCP	The user can choose Static or DHCP (Dynamic acquisition of IP)
IP Address		The IP Address of networking products
Port	0～65535	The monitoring port of Networking products when in the TCP Server or UDP mode. As a client, it is best to specify that the port is port 0, which is good for increasing the connection speed, and the system will randomly assign a local port when using the 0 port. At this time the difference from specifying the non-zero port are: (1) local port is 0, module sets up a new TCP connection with PC when restarting, old TCP connection may not be closed, so that the old TCP connection of the host has been unable to close, specify the non-zero port does not have the problem. Generally host wants to close the old connection when the module is restarted. (2) the local port is 0, the time of TCP rebuilding connection is faster.
Work Mode	TCP Server(TCP Server Mode),TCP Client(TCP Client Mode),UDP Mode, UDP Multicast	When set to TCP Server, the network Server needs to actively connect the networking products; When set to TCP Client, the networking product initiates the connection to the network server specified by the destination IP.
Net Mask	eg: 255.255.255.0	Must be same as net mask of local LAN.
Gateway	eg: 192.168.1.1	Must be the same as the local LAN gateway. If it is not crossing outer network (such as the cable connecting computer), it is best to set the gateway as the IP address of the connected computer.
Dest. IP/Domain		In the TCP Client or UDP mode, the data will be sent to the destination IP or the computer of domain name instruction.
Dest. Port		In the TCP Client or UDP mode, the data is sent to the destination port of the destination IP.
Baud Rate	1200, 2400, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 57600, 76800, 115200, 230400, 460800	Serial baud rate

Data Bits	5, 6, 7, 8, 9	
Parity	None, Even, Odd, Mark, Space	
Stop Bits	1, 2	
Flow Control	None (no flow control), CTS/RTS, DTR/DCR, XON/XOFF	RS232 port valid
DNS Server IP		When the destination computer is described by a domain name, DNS server is required to resolve the domain name, which specifies the IP of this DNS server. When the IP mode is DHCP, the parameter is not specified and will be automatically acquired.
Dest. Mode	Static, Dynamic	UDP working mode: if the destination computer is described by a domain name, it's best to choose the static mode; If there are multiple computers in the LAN communicating with networking products through UDP, it is best to choose dynamic mode. TCP server mode: this parameter must be dynamic. TCP client mode: when IP mode is dynamic, the destination IP is reconnected after the device is restarted, so that the correct IP address can be obtained again. Otherwise, it will do direct connection without automatically restarting the device.
Transfer Protocol	NONE, Modbus TCP<->RTU, Real_COM	NONE indicates that the data forwarding from the serial port to the network is transparent; Modbus TCP<->RTU will convert Modbus TCP protocol directly into RTU protocol to facilitate coordination with Modbus TCP protocol; RealCOM is designed to be compatible with the old version of REAL_COM.
Keep Active Time	0～255	(1) Choose 1~255, if the device is in the TCP client working mode, the TCP heartbeat will be sent automatically for every "keep alive time". This can guarantee the TCP availability of links. When set to 0, there will be no TCP heartbeat. (2) Set to 0~254, when transformation protocol choose REAL_COM protocol, the device will send a length of 0 to 1 content data for every " keep alive time " to implement the heartbeat mechanism of Realcom. When

		set to 255, there will be no Realcom heartbeat. (3) Set to 0~254, if the device is working on the TCP client, the device will send the parameters to the destination computer every " keep alive time ". When set to 255, no have the parameter sending function. This mechanism is not normally used, users are not required to pay attention.
Reconnect Time	0～255	Once the networking products in a TCP client mode disconnect with the server (as long as in the non-connection status), it will initiates a TCP connection to the Server every while, can be 0~254 seconds, if set 255, never for reconnection. Note first TCP connection would immediately (such as hardware on electricity, through zlvircom software restart equipment, no data), only after the first connection failure will try again after waiting for the "break time", so "break time" will not affect the network and server connection setup time under normal circumstances.
Http Port	1～65535	
UDP Group IP		UDP multicast
Max Frame Length	1～1400	One of the rules of serial. The connected product serial port sends the received data to the network as a frame after receiving the length data.
Max Interval (Smaller will better)	0～255	One of the rules of serial. When there is a pause in the data received by the connected product, and the pause time is greater than that time, the received data is sent to the network as a frame.

6.2 Parameter Modification Method

6.2.1 ZLVircom Type

ZLVircom find the device and edit the device parameters through the Internet searching. Its advantages include:

1) No need PC and networking products in the same IP network segment.

2) Even the networking products having IP conflicts between can be

modified the parameters.

3) You don't need to know the IP address of the networking product.

4) More parameters can be modified.

6.2.2 Web Browser

If the ZLVirCom program is not installed on the user PC, the parameters can be modified through the Web login.

1) Enter the IP address of the networking product in the browser, such as http://192.168.1.200, and open the following page.

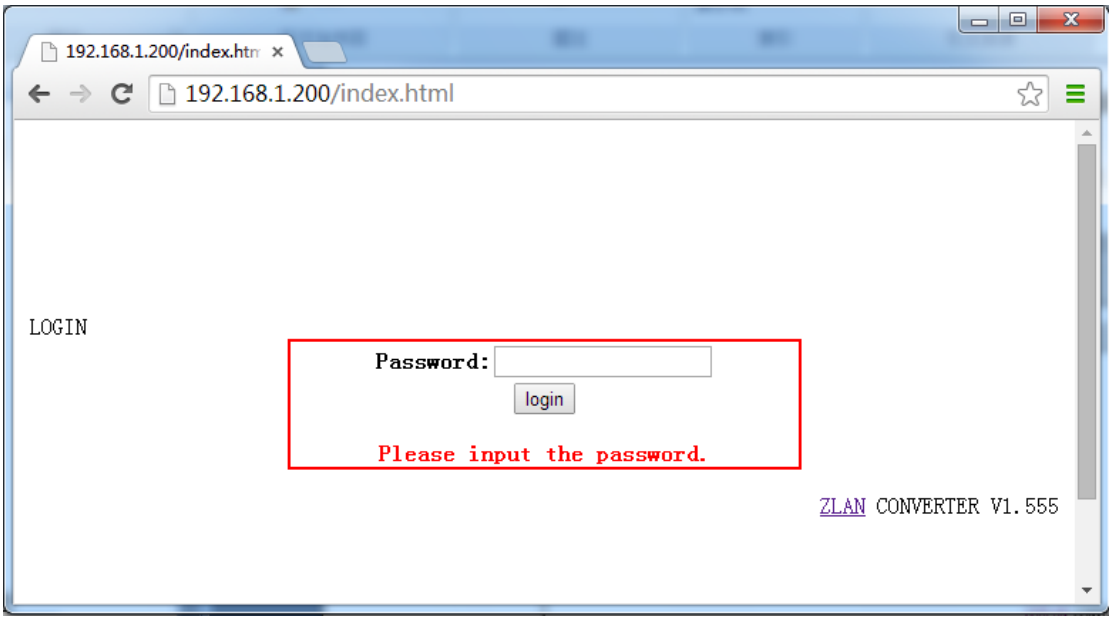

Figure 16

2) Enter Password in “Password”: default is 123456. Click the “login” button to log in.

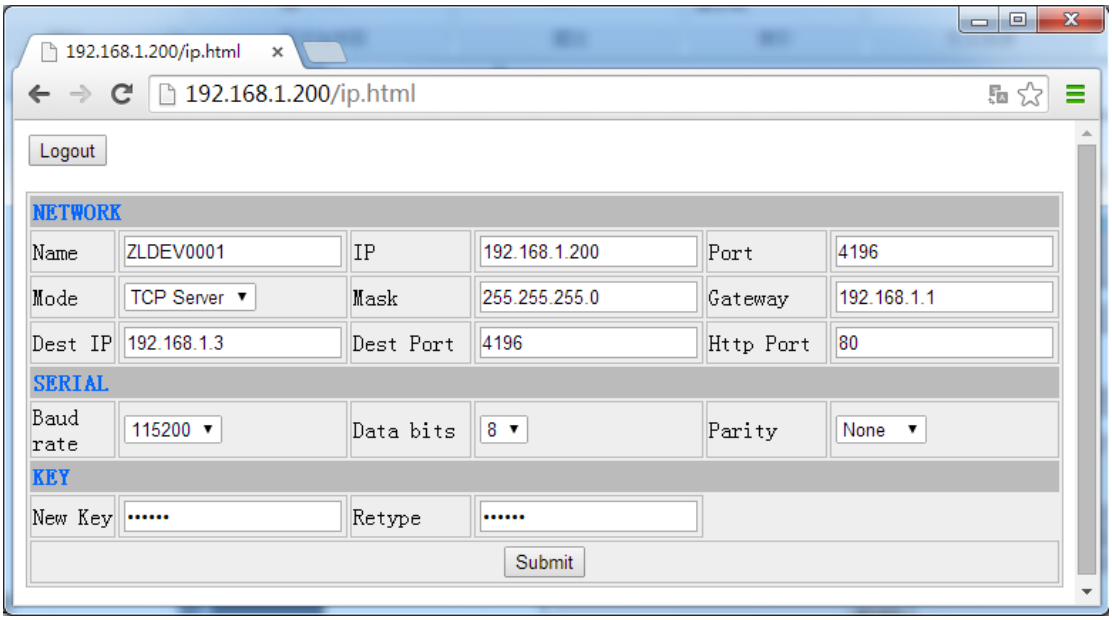

Figure 17

3) In the appearance of the Web page, you can modify the parameters of the networking product. In addition to the parameters of the Web login password, the parameters are already specified in the before parameter definition. The Web login password is the password for the login of the page.

4) Click "submit" button after modifying parameters.

5) Please click "exit" button after the modification, anyone can enter this configuration interface if not quit.

7. Basic Usage

7.1 Device Search

Run ZLVircom software and click "Device Manage" to see a list of devices.

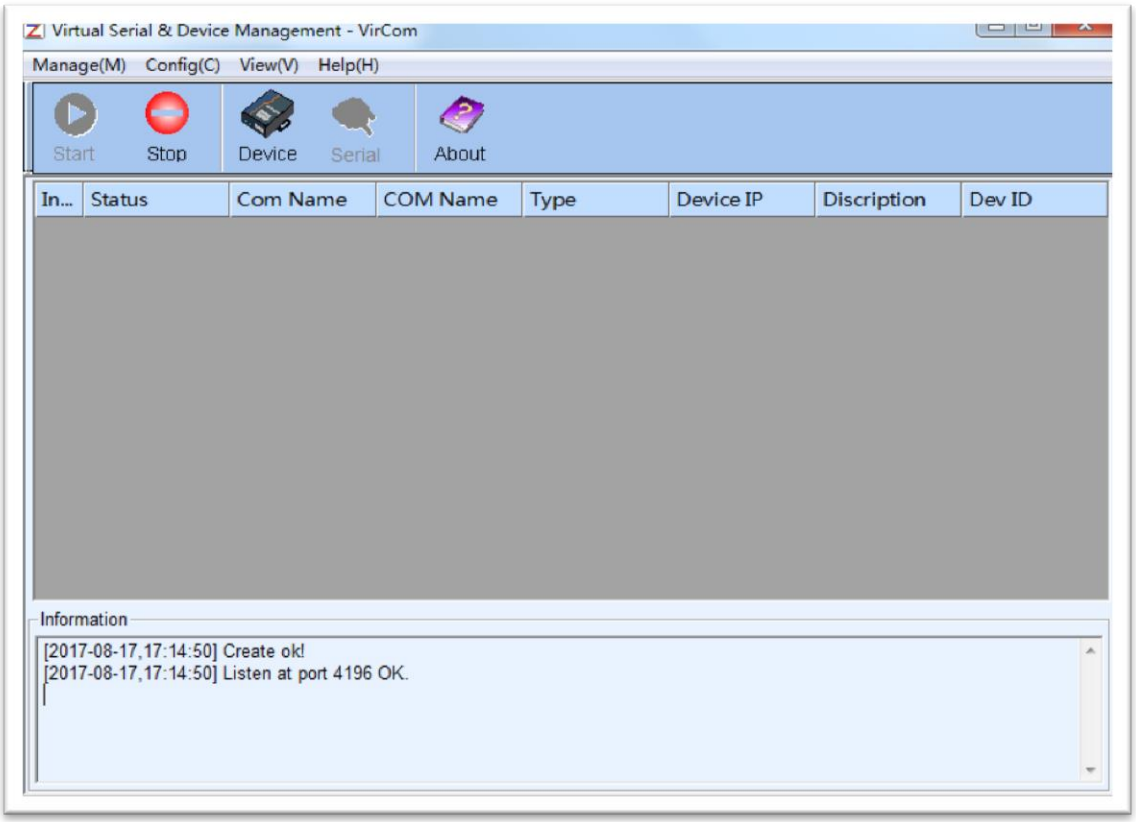

Figure 18 ZLVircom Main Interface

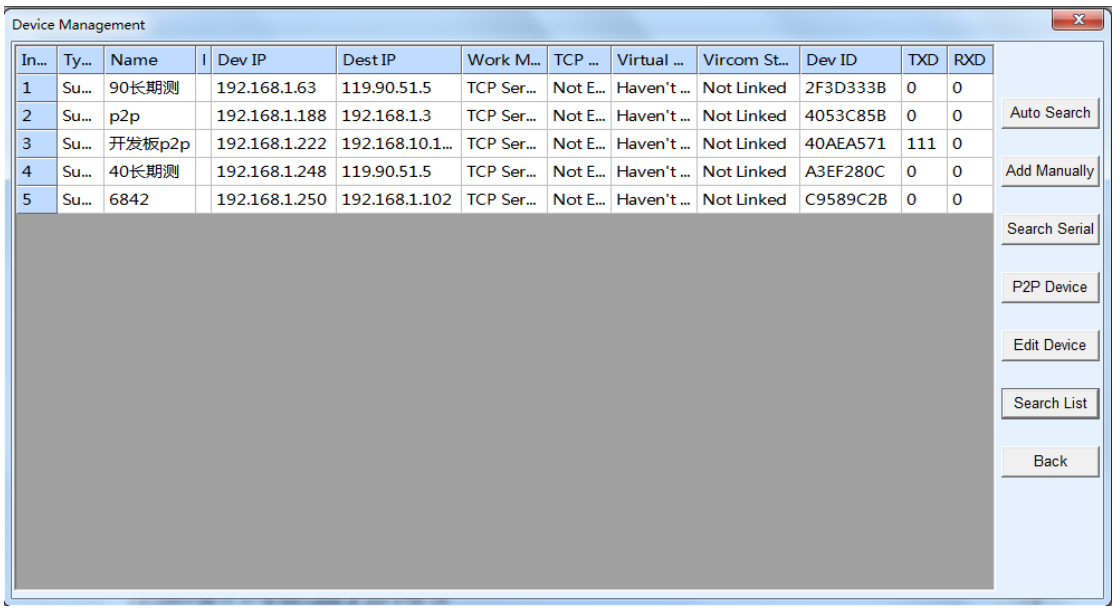

Figure 19 Device List

From the device list, you can see all of the current online devices, and you can search for devices that are not in one network segment. There is no need to use

the "Add Manually" function.

7.2 Parameter Configuration

Double-click on a single line to edit the device parameters.

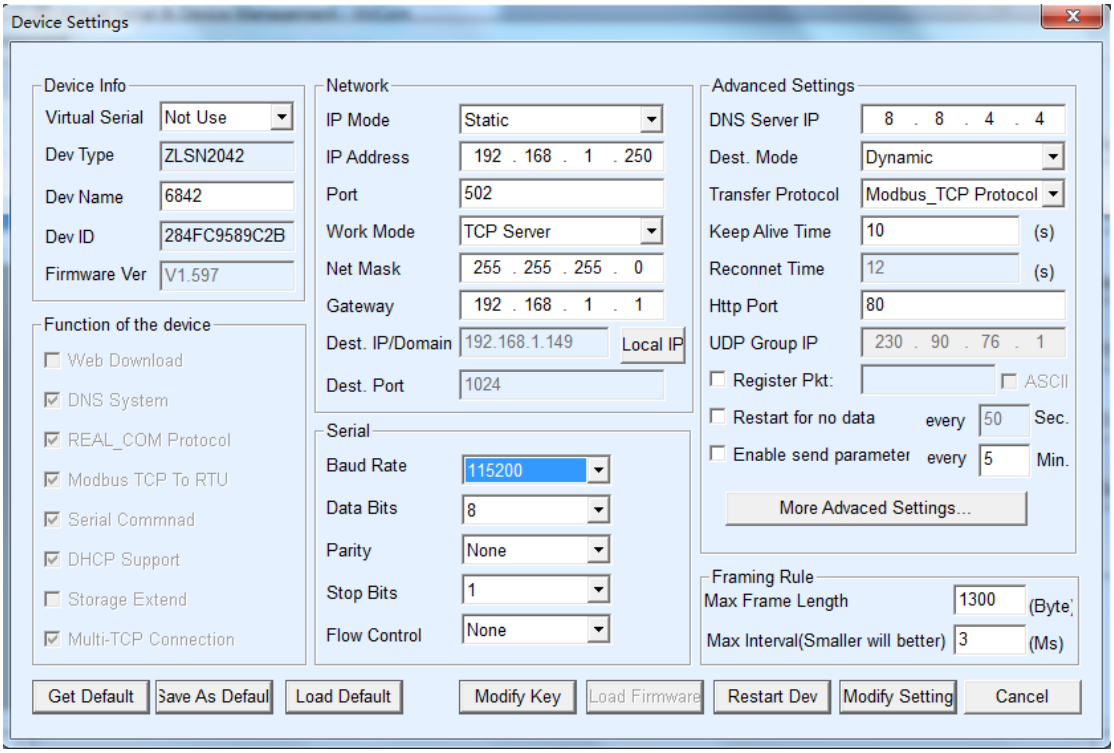

Figure 20 Device Edit Interface

In this interface, the user can set the parameters of the device, then click "Modify Setting", and the parameters are set to the flash of the device, with power-off no lost. The device will restart automatically.

7.3 Transparent Communication

Now we need to test the transparent communication function of the networking products. The transparent communication is: what data sent by computer to a networking product, the serial port of the networking product will output what data. Instead, what data the serial port received, it will send to the network computer.

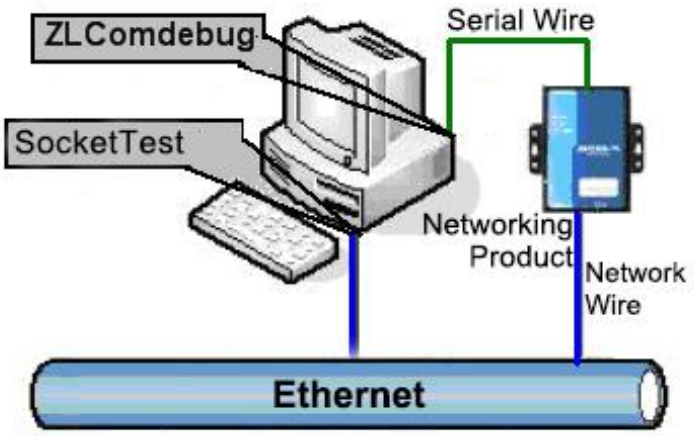

Figure 21 Transparent Transmission Diagram

If the COM port of PC is connected with the serial port of networking product, then open the ZLComDebug serial port debugging assistant, the ZLComDebug can communicate with the serial port of networking product. Open TCP&UDP debugging assistant SocketTest, and as TCP client, connect to the 4196 port under the IP (currently 192.168.1.200) of the networking product, and the TCP link can be established with networking products.

Since then, the data sent by SocketTest can be received by ZLComDebug, and the data sent by ZLComDebug can also be received by SocketTest.

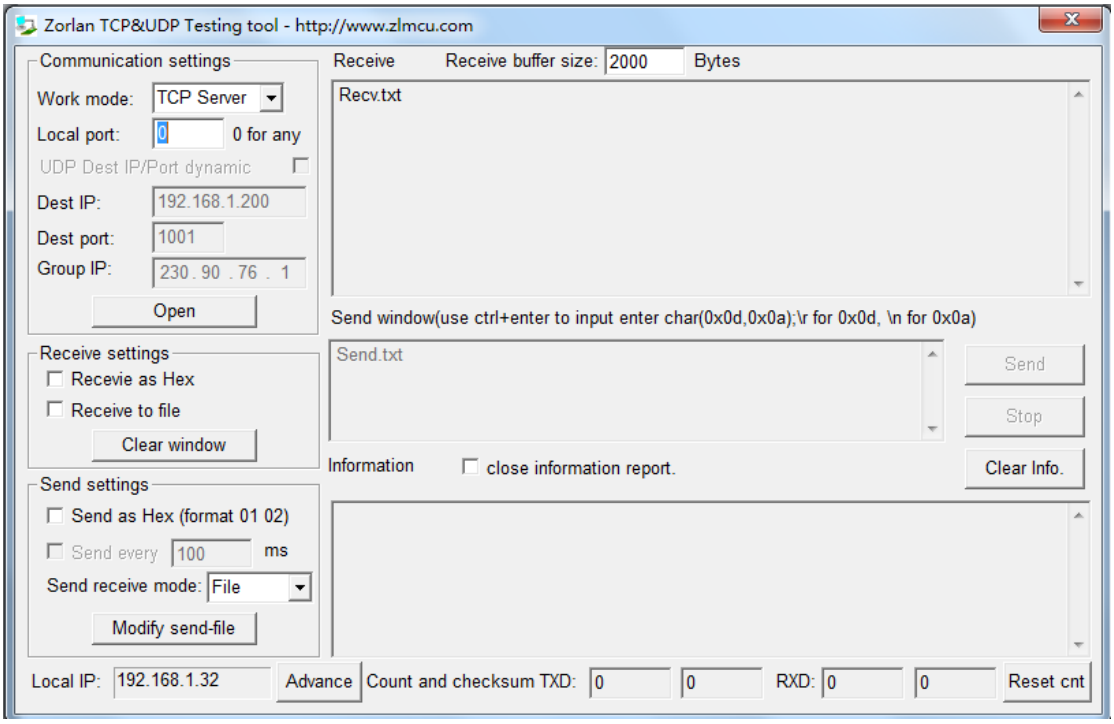

Figure 22 SocketTest Send-receive Interface

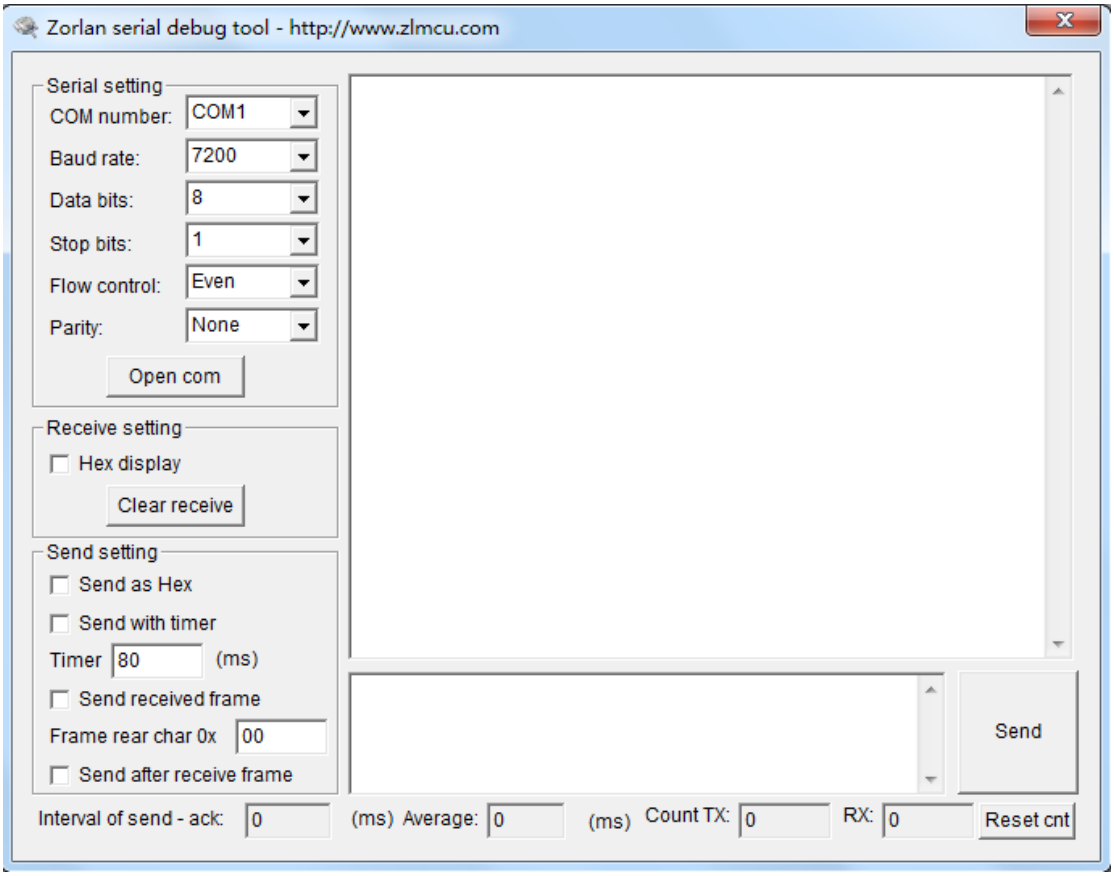

Figure 23 ComDebug Send-receive Interface

From FIG. 22 and FIG. 23, transparent communication between serial port and network port is carried out. If the serial port is connected to a user's serial port device, it can communicate with device serial port through the network TCP connection for data collection and control.

7.4 Virtual Port

In FIG. 5 SocketTest is through TCP&UDP to communicate with device, in order to let the user’s developed serial port software can be used but no need to be modified for TCP communications, need to add a converting step of COM port to TCP between the user program and TCP. ZLVircom can do this.

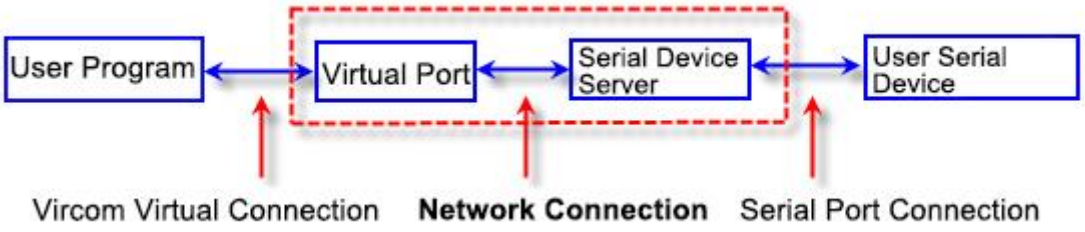

Figure 24 Virtual Port Usage

Click on the "Serial Manage" of the main interface of ZLVircom, then click "Add", and select COM5, where COM5 is the COM port that didn’t exist on the computer.

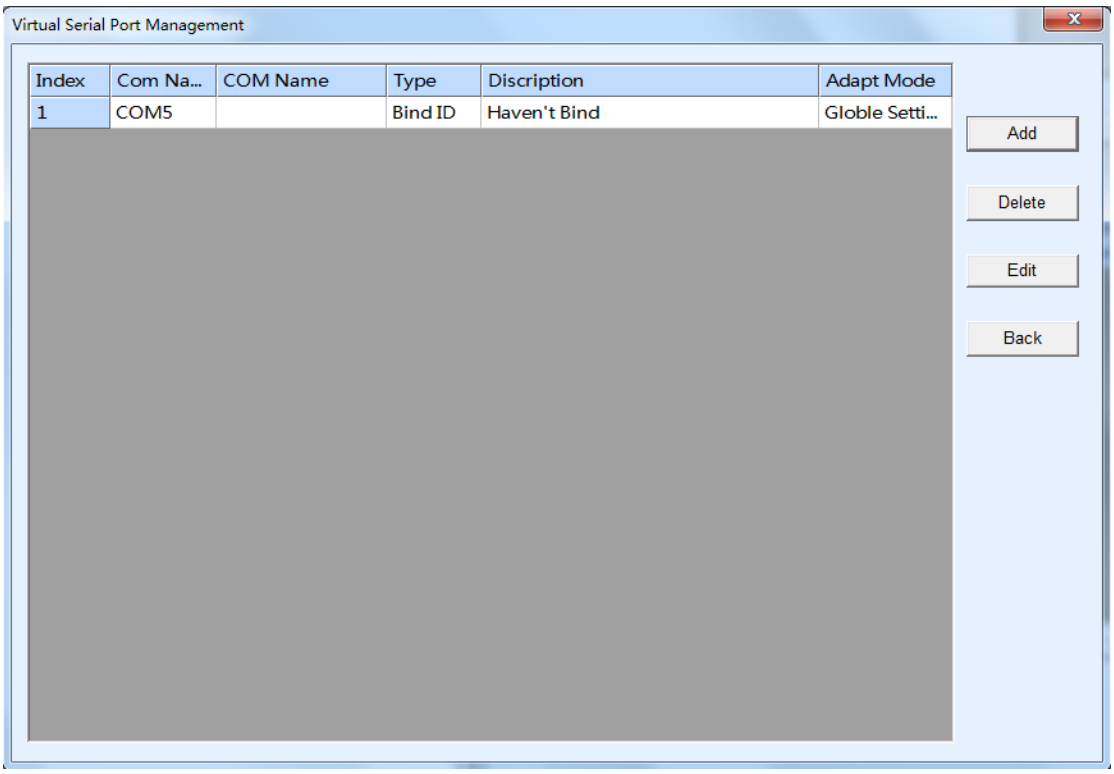

Figure 25 Add Virtual Serial Port

Then enter the “device manage”, and double-click the device that you need to bind to the COM5. As shown in FIG. 20, select COM5 from the "virtual serial port" list in the upper left corner. Then click "modify Settings". And return to the main interface of ZLVircom. You can see that the COM5 has been connected to a device with IP 192.168.1.200. You can use COM5 instead of SocketTest to communicate.

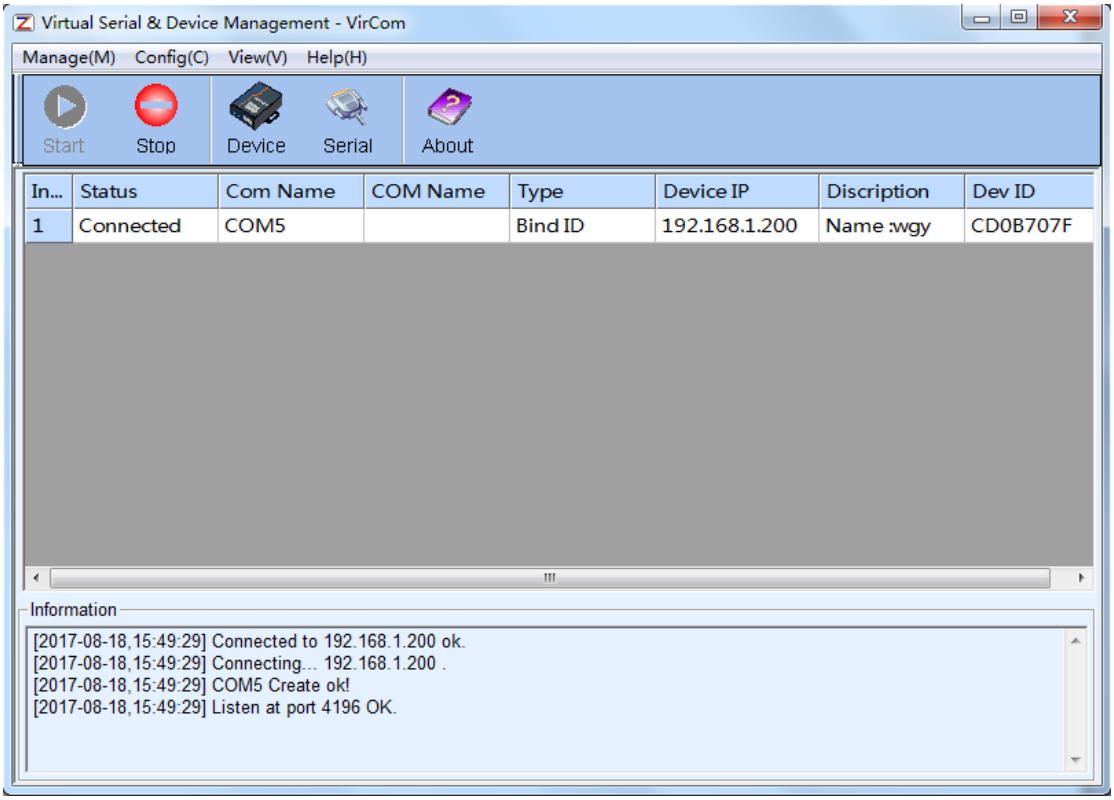

Figure 26 Virtual Serial Port has been connected

Now close the before SocketTest and open a new ZLComdebug as the user's serial port program, now open COM5. At this point, COM5 (virtual serial port) and COM4 (hardware serial port) can send-receive data through networking products. If the serial port of the connected product is not connected to the COM port of PC, but a serial port device, then the COM5 can be opened to communicate with the device. And it's just use the network way now.

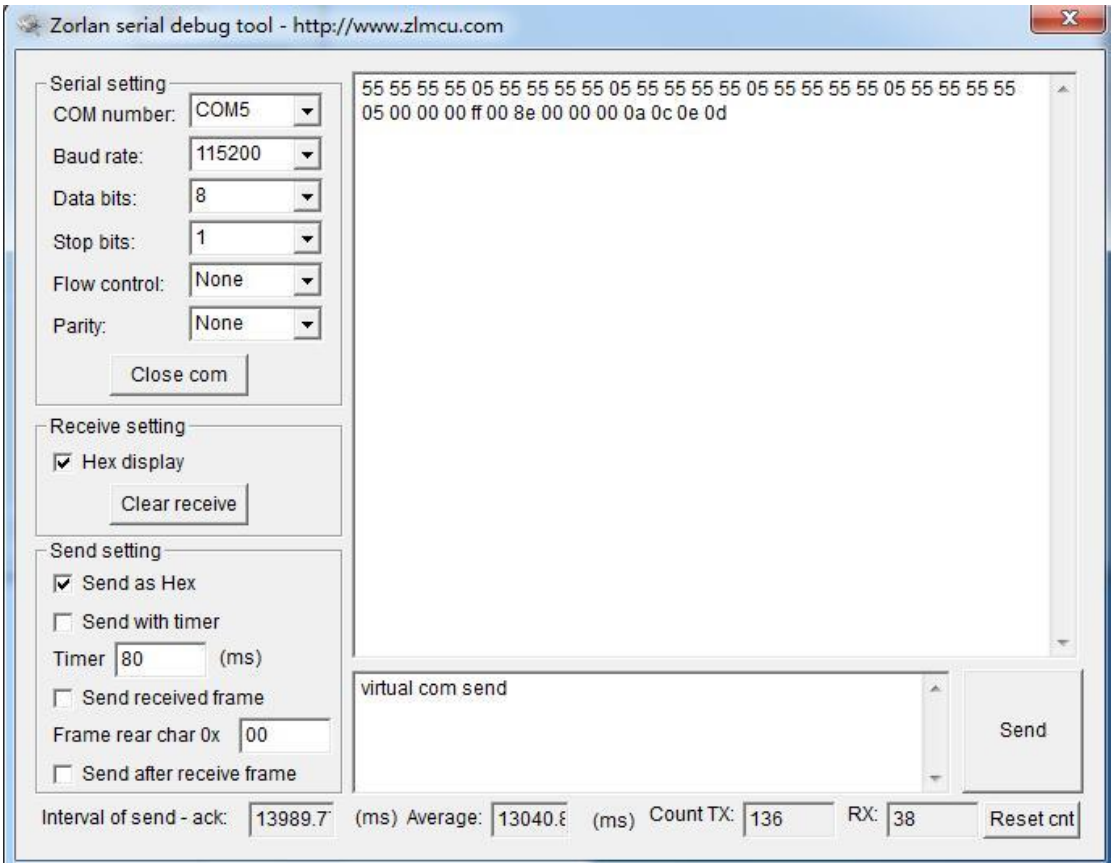

Figure 27 Communication via Virtual Serial Port

7.5 Different Work Mode and Parameters

In the "7.3 Transparent Communication" section, it mainly describes how to communicate when networking products are used as TCP servers. This section describes how to configure the parameters when as the TCP client and UDP mode communicate with computer software and another networking module. The computer software takes SocketTest as an example.

ZLAN networking products comply with the standard TCP/IP protocol, so any network terminal complying with the agreement can communicate with the networking products, ZLAN technology provides the network debugging tools (SocketDlgTest program, the user can find the software in the start menu/procedures/ZLVircom/debugging tools) to simulate the network terminal to communicate with the networking products.

If want two network terminals (network debugging tools and networking products)

can communication, the parameter configuration must be matched.

7.5.1 UDP Mode

In UDP mode, the parameter configuration is shown in figure 28, left is the configuration of networking products in vircom, and right is the setting of SocketDlgTest for network debugging tools. First the two must be both UDP work modes. In addition, the red arrows indicate that the destination IP and port of network tool must point to those of networking products. The blue arrows indicate that the destination IP of networking products must be the IP address of computer which the network tool in, and the destination port of networking products must be the local port of network debugging tool. These network parameters are configured to ensure two-way UDP data communication.

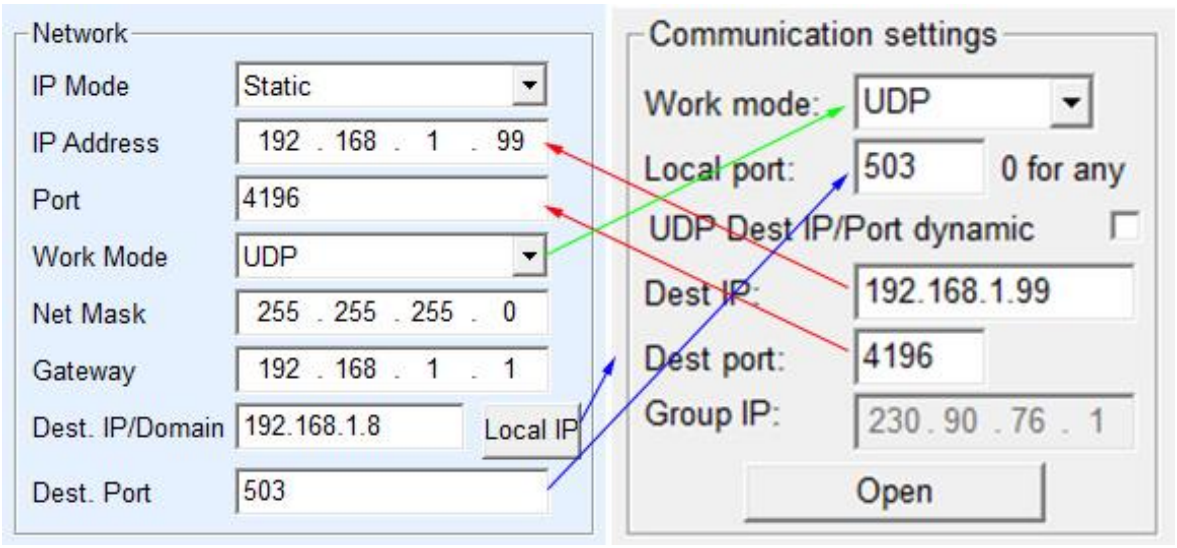

Figure 28 UDP mode Parameter Configuration

7.5.2 TCP Mode

Work mode in the TCP mode has two type: TCP server and TCP client, no matter adopt what kind of mode, must one is the Server, the other is the Client, then Client can access the Server, both for the Client or the Server is unable to realize communication.

When networking products are used as clients, there must be three

corresponding relationships, as shown in figure 29. The Work Mode of networking products as Client Mode corresponding to the Server Mode of network tools, the destination IP of networking products must be the IP address of the computer which network tools in, the destination port of networking products must be the local port of network tools. The networking product will automatically connect the network tools after setting, and the data can be sent and received after the connection is established.

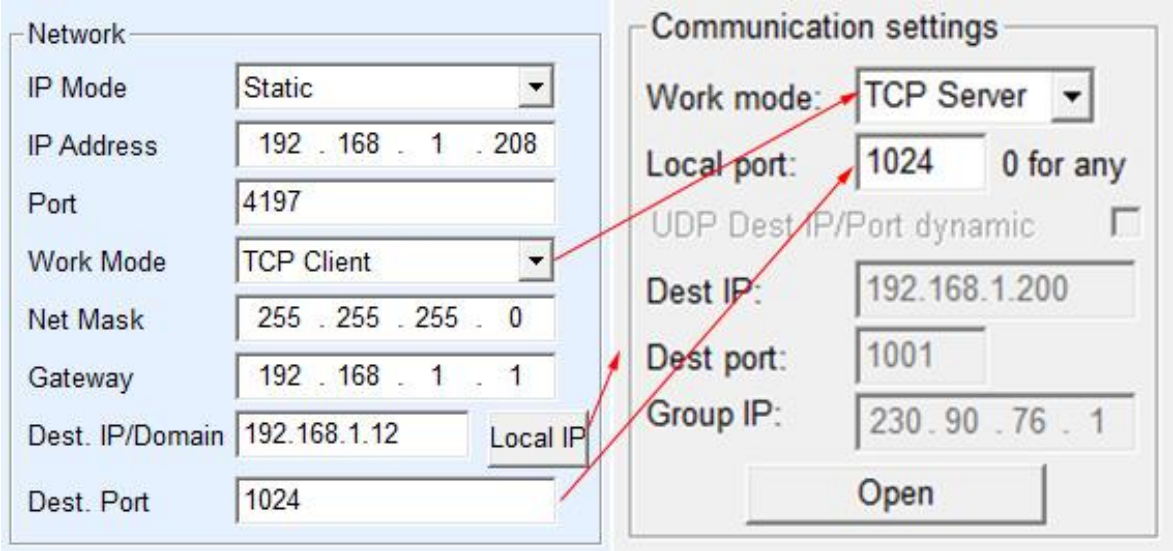

Figure 29 Networking Products as Client

There are also three corresponding relationships when networking products as Server, as shown in figure 20. After this setting, click on the open button of the network tool to establish a TCP connection with the networking product, and the data can be sent and received after the connection is established.

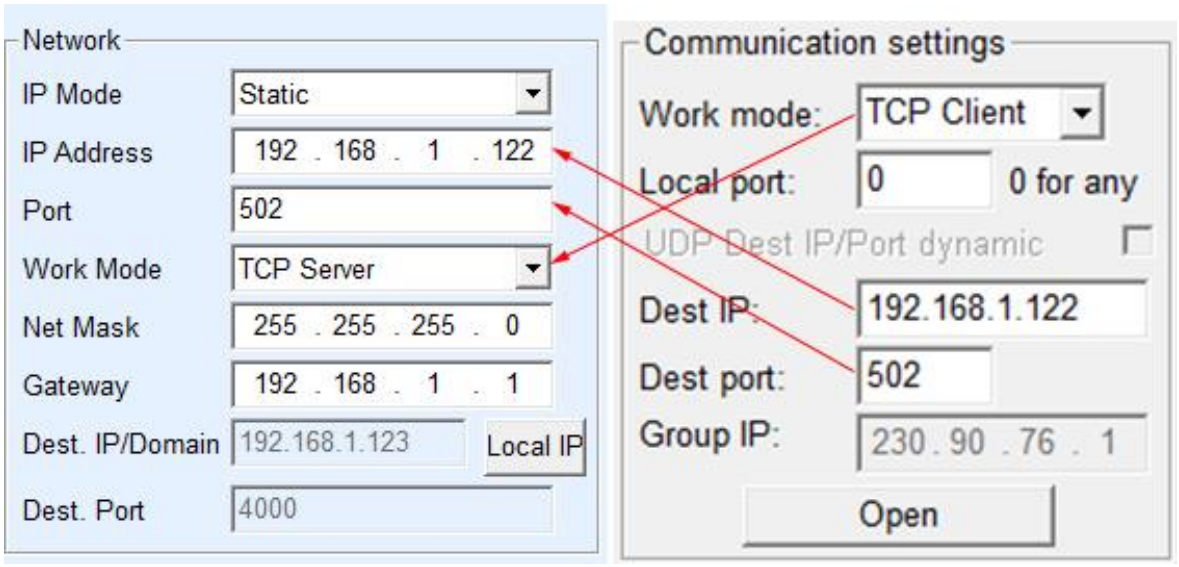

Figure 30 Networking Products as Server

7.5.3 Pair-Connection Mode

If the host is not a Socket program (SocketDlgTest) or ZLVircom, but the two devices are connected via the Ethernet port, the configuration method is similar. First, users need to connect two devices and the computer to the same LAN. This computer runs ZLVircom (or ZLDevManage), it is just to configure, after configuration there no need to connect.

Click on ZLVircom's Device Manage to find these two devices, as shown in figure 32. Then click "device edit" to configure the device. Device pair-connection can be divided into TCP pair-connection and UDP pair-connection. If it is a TCP pair-connection, the parameters of the two devices are shown in figure 31. The parameters shown by the arrow must correspond as the corresponding mode of connection to the PC machine. After the success of the TCP connection, can return to the "Device Manage" dialog to see the connection status, as shown in figure 32, if the state of the two devices are "connected" say TCP link has been established between the two devices.

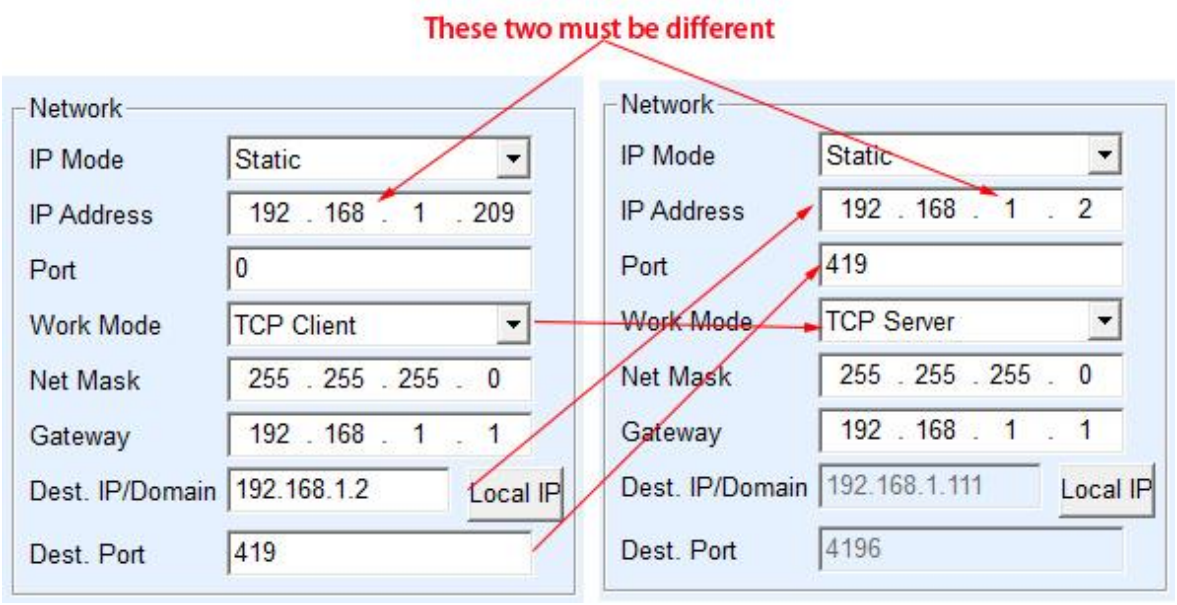

Figure 31 TCP Device Pair-connection Configuration

In...	Ty...	Name	I	Dev IP	Dest IP	Work M...	TCP ...	Virtual ...	Vircom St...	Dev ID	TXD	RXD
1	Su...	LYH		192.168.1.2	192.168.1.3	TCP Ser...	Estab...	Haven't ...	Not Linked	B8AC6D4F	0	0
2	Su...	LYH		192.168.1.209	192.168.1.2	TCP Clie...	Estab...	Haven't ...	Not Linked	B7F74C2A	0	0

Auto Search

Figure 32 TCP Devices Pair-connection Success Check

If the pair-connection in UDP mode, the configuration parameters are shown in figure 33, and the corresponding parameters of the arrows must be one-to-one. In UDP pair-connection the data will automatically be sent to the specified device as long as the parameters are configured correctly without checking the connection status.

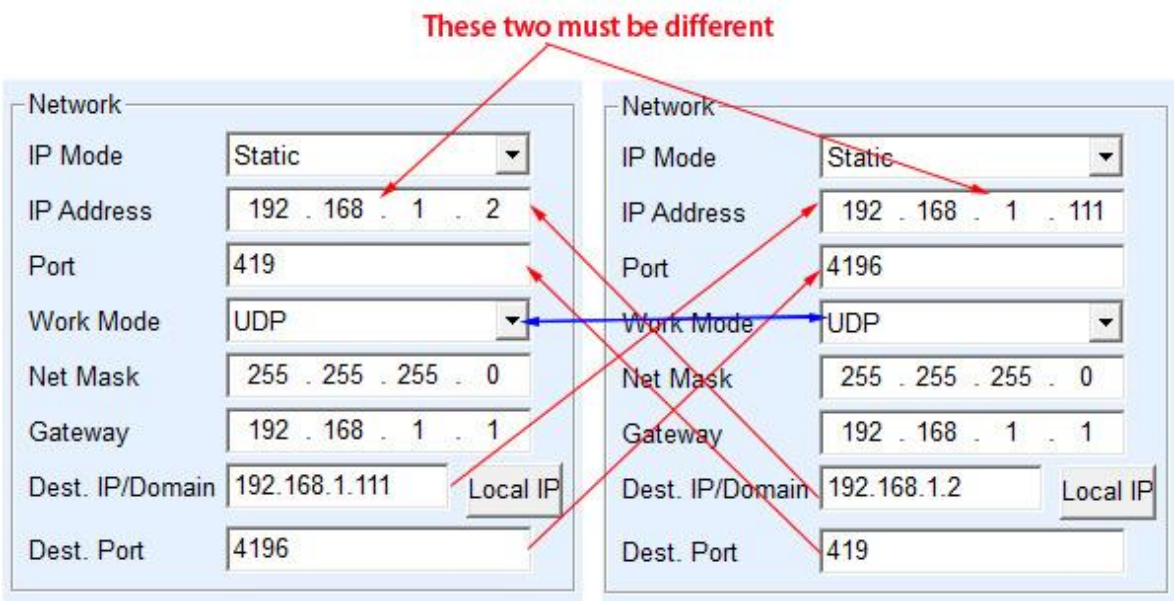

Figure 33 UDP Device Pair-connection Configuration

Finally, it is necessary to remind that if the device is pair-connected, except the Ethernet parameter configuration set as above, the serial port parameters also need to be correctly set. It is mainly because the baud rate of the networking products and the baud rate of the user's device should be accordance. After this setting, user devices can send data to each other through the serial port of two networking products.

7.6 Firmware upgrade

Models such as ZLAN7004, 7044, 7004N, 7044N, etc. can upgrade their respective programs, but cannot upgrade each other. Their upgrade method is similar to the 2003 upgrade method. Take 7004 as an example.

1) Parameter setting considerations: do not select the option "Restart for no data", otherwise it may cause the chip to be damaged if the restart occurs in the upgrade process.

2) Get the firmware files of ZLAN7004 from ZLAN, such as 1.141(2004). BIN.

3) In the ZLVircom tool, search for the device that needs to be upgraded first, then enter the device parameter edit dialog box, and click the “Load firmware”

button in the lower right corner of the dialog box.

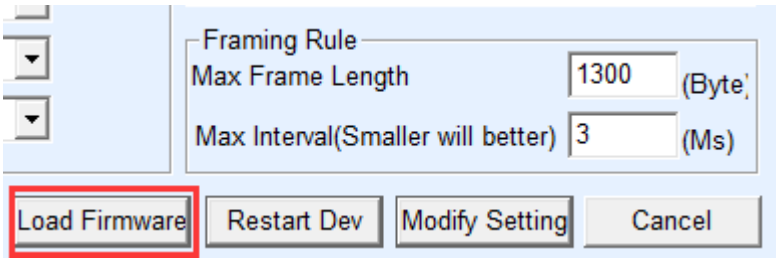

Figure 34 Check ZLFsCreate Version

4) Select "Code file download mode" as shown in figure 35. In the program file, choose the firmware file. The IP address part of the networking product has been automatically filled out and no further writing is required. The module type/model has been selected automatically. Then click download.

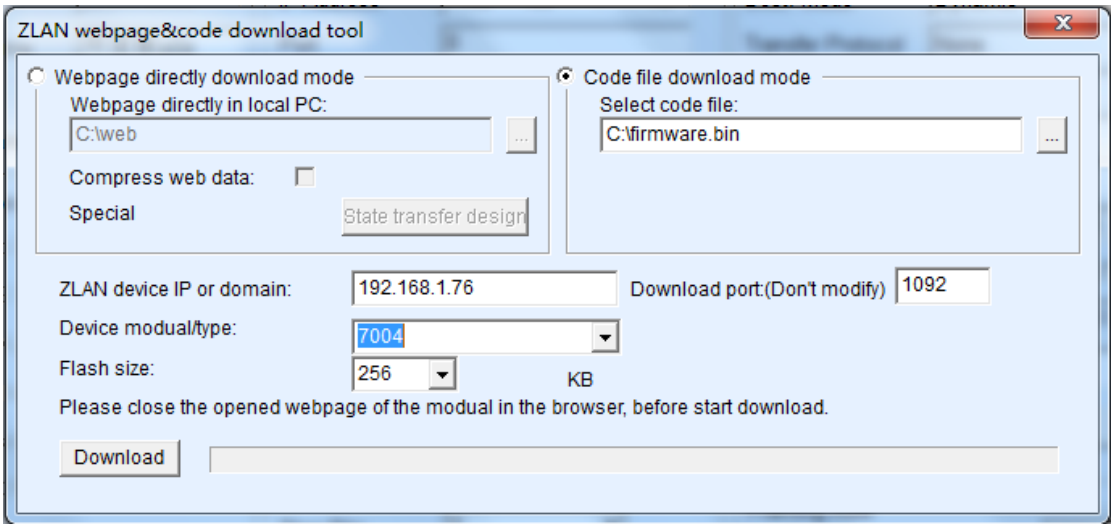

Figure 35 ZLAN7004 Firmware Upgrade Method

5) The download progress bar start moving, download time about 30 seconds. During the download, you'll see the device ACT light flicker, and at the end of the download, you'll see the LINK light flashing. Then the program pops up the prompt box that "Don't power-off when LINK light flashing after transmission complete". **Note:** this is only the transmission completing, it will take about 28 seconds to write the flash process, at this time the LINK light will blink and please do not cut power during this time.

6) After the download, generally the program will automatically restart and you'll see the running indicator light flashing. If there is no automatic restart, please power-on again after the LINK light stop flashing for more than 3 seconds and.

7) Note:

   a) If the download fails, the device will not be damaged. Please start downloading again. If you fail to download many times, please directly connect with computer by cable to download. At the end of the download, please do not power-off when the green light blinks, otherwise the device will be damaged.

   b) Check the firmware version number through ZLVircom, can see if the new firmware has been downloaded successfully.

8) The configuration pages within the module also need to be updated after the firmware upgraded, otherwise the Web configuration will not be available again. The way to download the Web is: shown as FIG. 35, change the "Code file download mode" to "Webpage directory download mode". And choose the root directory of local Webpage as the file directory for the Webpage file needed to download (the directory can be obtained from ZLAN), click on the download, all files in the local Webpage directory will be downloaded to the file system within ZLAN7004.

8. After-Service

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