Networking products

User Guidance

Embedded device networking solutions

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1. Summary

This document introduces the parameter configuration, use and test methods of ZLAN networking products. The models include: 0 series, 2 series and 3 series of all serial port to Ethernet modules / serial port servers; Zlan7142 of WiFi to serial port; Zlan6042, zlan6032, etc. of IO control products.

This document includes the meaning of parameters, configuration methods, driver installation and testing. It also includes the use of Modbus TCP products. For the use of the web page module, please refer to the relevant documentation of the web page module.

2. ZLVircom Install

2.1. ZLVircom

Zlvircom is a search, parameter setting and virtual serial port software for zhuolan devices. It is divided into installed version and non installed version. Users who do not use virtual serial port can use the non installed version.

Direct operation of non installed version: zlvircom400 Exe.

The installation version can be installed on Windows XP, Windows 2000, windows7, windows8 and other platforms. For 32-bit systems, install zlvircom399_ X86.msi, for 64 bit systems, install zlvircom400_ x64.msi.

Install according to the prompt. Note that this software should be allowed to communicate through the network and should not be blocked by the firewall.

For the detailed use of zlvircom, please refer to the zlvircom_um document.

2.2. Tool software

Let's take a look at the tools available after the installation of zlvircom. Open the start menu and see the zlvircom submenu：

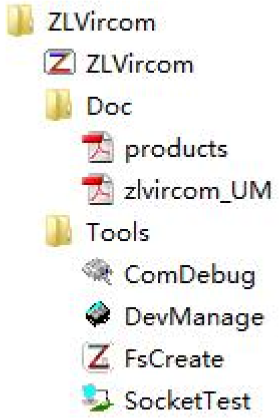


Chart 1 Tool list

Specifications as follows：

Chart 1 Specifications

Software En.name	Software Cn.name	Specifications
ZLVircom	Device Management & Virtual serial Port tools	1. Search the devices in the network through the network interface, and configure the device parameters. 2. Create, bind and delete virtual serial port.
Products.pdf	User Guide for Networked Products (This document)	Basic product usage.
Zlvircom_UM.pdf	ZLVircom Usage	
ComDebug	Serial debugging assistant	The serial port can send and receive string and hex format commands.
DevManage	Device management	Zlvircom without virtual serial port. Now it can be replaced by zlvircom.
FsCreate	Download tool	It can be used for webpage download of webpage module and firmware download of Series-3 module.
SocketTest	TCP&UDP Debug tool	It can be used as TCP server, TCP client, UDP and UDP multicast. This tool is very useful for equipment testing and can be used as computer software to communicate with equipment.

3. Hardware connection

3.1. Serial port connection

Please refer to the product manual of each model for the hardware interface characteristics of different devices. General equipment has at least one serial port, which is divided into core module, TTL level, RS232, RS485 and RS422 according to the type of serial port. Different serial port connection methods are as follows：

Chart 2 Serial port type

Serial port level	Item model	Connection
Core module	ZLSN2000、ZLSN2002、ZLSN2003、ZLSN2003S	Plug in to the user circuit board, and the user circuit board MCU UART cross-docking
TTL	ZLSN3000、ZLSN3002、ZLSN3003、ZLSN3003S	Cross-docking with UART of MCU of user circuit board via wire or pin
RS232	ZLSN2100、ZLSN5102、ZLSN2103、ZLAN2100、ZLAN5102、ZLAN2103、ZLAN7142、ZLAN5142、ZLAN5200、ZLAN5400、ZLAN5800	Connect to a DB9 male device, such as a COM port on a computer, through crossed mother-to-mother serial cables.
RS485	ZLSN3100、ZLSN5102、ZLSN3103、ZLAN3100、ZLAN5102、ZLAN3103、ZLAN7142、ZLAN5142 、ZLAN5200、ZLAN5400、ZLAN5800	Connect to the RS485 device through the 2-wire RS485 cable. If connected to the COM port of the computer, add an RS232 to RS485 converter
RS422	ZLSN3100、ZLAN5200、ZLAN5400、ZLAN5800	Connect to RS422 device via 4-wire RS422 wire.

Assuming that the serial device here is the COM of the computer, we will follow this example to test

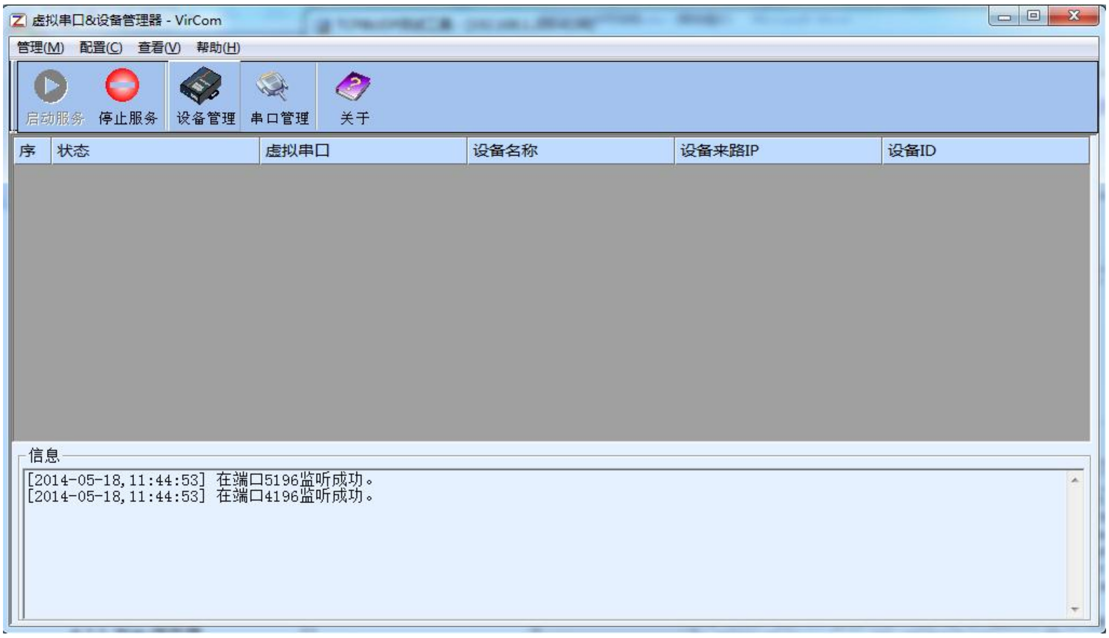
3.2. Ethernet LAN connection

Connect the device's network port directly to the computer's network port or to the router's network port

4. Product easy usage

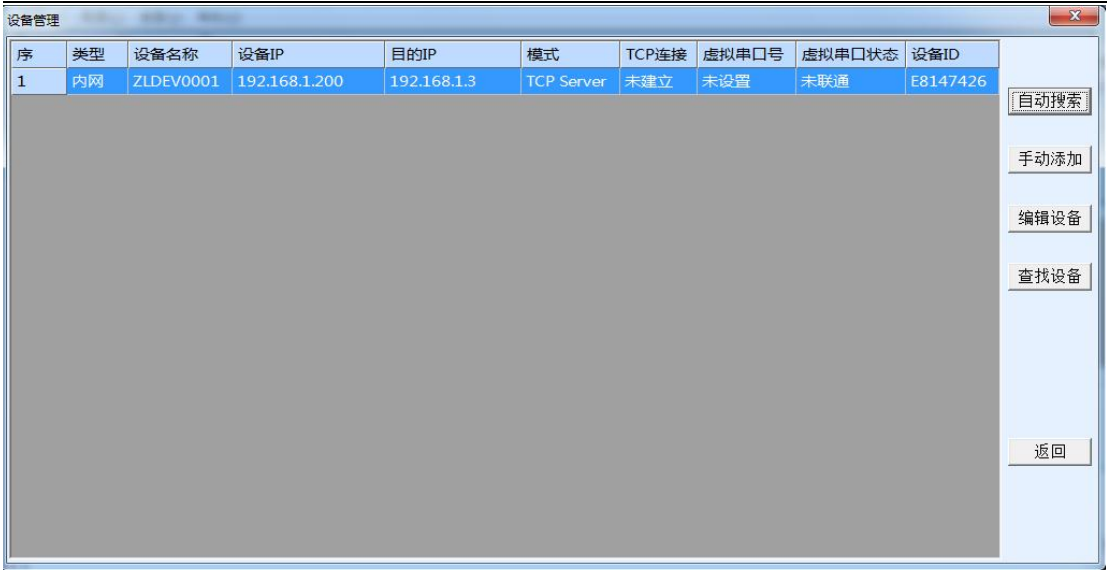
4.1. Search device

Run the ZLVircom software and click on "Device Management" to see a list of devices.


虚拟串口&设备管理器 - VirCom
管理(M)
配置(C)
查看(V)
帮助(H)
启动服务
停止服务
设备管理
串口管理
关于
序
状态
虚拟串口
设备名称
设备来路IP
设备ID
信息

```
[2014-05-18,11:44:53] 在端口5196监听成功。
[2014-05-18,11:44:53] 在端口4196监听成功。
```

Figure 2 ZLVircom main page



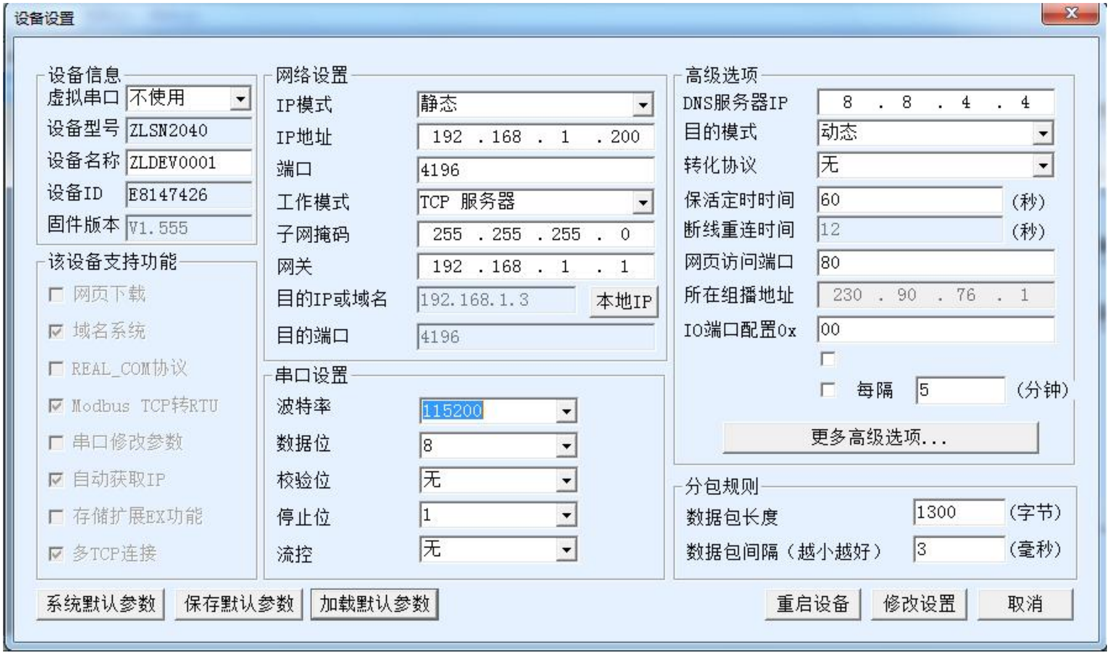
序	类型	设备名称	设备IP	目的IP	模式	TCP连接	虚拟串口号	虚拟串口状态	设备ID
1	内网	ZLDEV0001	192.168.1.200	192.168.1.3	TCP Server	未建立	未设置	未联通	E8147426

Figure 3 device list

In the device list, you can view all online devices and search for devices that are not in the same network segment. Generally, the Manual Add function is not required.

4.2. Parameter configuration

You can double-click a row of devices to edit device parameters.



设备信息
虚拟串口 不使用
设备型号 ZLSN2040
设备名称 ZLDEV0001
设备ID E8147426
固件版本 V1.555

该设备支持功能
☐ 网页下载
☑ 域名系统
☐ REAL_COM协议
☑ Modbus TCP转RTU
☐ 串口修改参数
☑ 自动获取IP
☐ 存储扩展EX功能
☑ 多TCP连接

网络设置
IP模式 静态
IP地址 192 . 168 . 1 . 200
端口 4196
工作模式 TCP 服务器
子网掩码 255 . 255 . 255 . 0
网关 192 . 168 . 1 . 1
目的IP或域名 192.168.1.3
目的端口 4196

串口设置
波特率 115200
数据位 8
校验位 无
停止位 1
流控 无

高级选项
DNS服务器IP 8 . 8 . 4 . 4
目的模式 动态
转化协议 无
保活定时时间 60 (秒)
断线重连时间 12 (秒)
网页访问端口 80
所在组播地址 230 . 90 . 76 . 1
IO端口配置0x 00
☐
☐ 每隔 5 (分钟)

分包规则
数据包长度 1300 (字节)
数据包间隔（越小越好） 3 (毫秒)

Figure 4 Device editing interface

In this interface, the user can set the parameters of the device, and then click

"Modify Settings", then the parameters are set to the flash of the device, power failure is not lost. At the same time, the device automatically restarts.

4.3. Transparent communication

Now you need to test the transparent communication capabilities of your networked product. Transparent transmission is what data a computer sends to a networked product. The serial port of the connected product outputs what data. On the contrary, what data is received by the serial port of the networked product and what data is sent to the computer on the network.

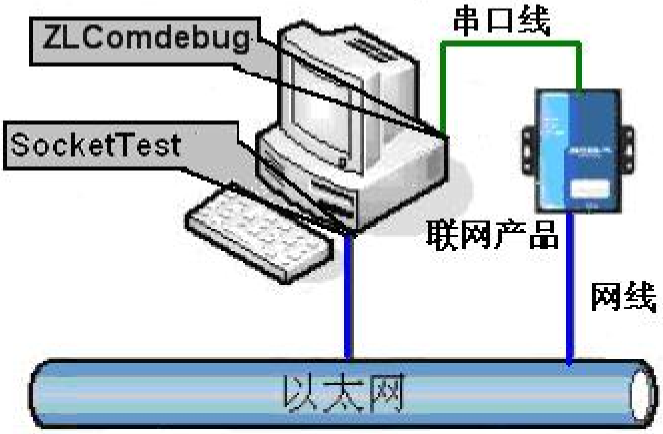
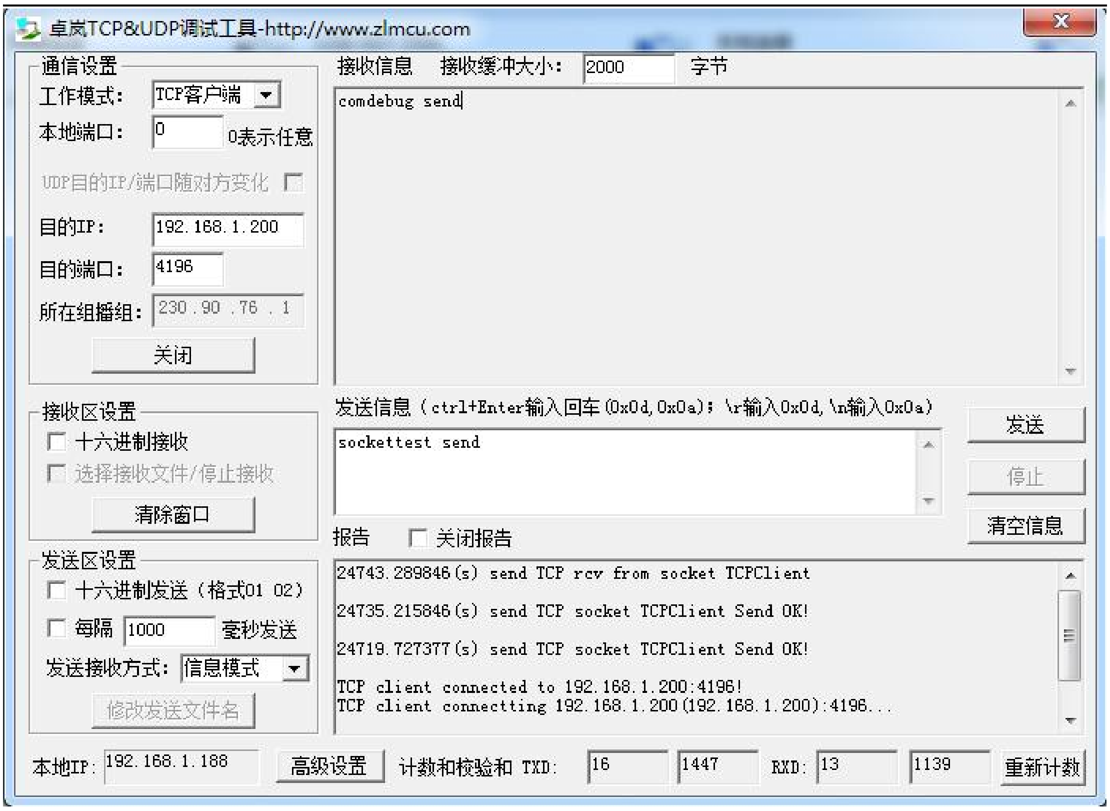


Figure 5 Transparent communication diagram

Assuming that the COM port of PC is now connected to the serial port of networked products, ZLComDebug serial debugging assistant is opened, and ZLComDebug can communicate with the serial port of networked products. By turning on the TCP&UDP debugging assistant SocketTest and connecting to port 4196 of the IP of the networked product (currently 192.168.1.200) as a TCP client, you can establish a TCP link with the networked product.

Data from SocketTest can then be received by ZLComDebug and conversely data from ZLComDebug can also be received by SocketTest.


卓岚TCP&UDP调试工具-http://www.zlmcu.com
通信设置
关闭
接收区设置
清除窗口
发送区设置
修改发送文件名
发送
停止
清空信息
高级设置
重新计数

工作模式：TCP客户端

本地端口：0 0表示任意

UDP目的IP/端口随对方变化 ☐

目的IP：192.168.1.200

目的端口：4196

所在组播组：230 .90 .76 .1

☐ 十六进制接收

☐ 选择接收文件/停止接收

☐ 十六进制发送（格式01 02）

☐ 每隔 1000 毫秒发送

发送接收方式：信息模式

接收信息 接收缓冲大小：2000 字节

```
comdebug send
```

发送信息（ctrl+Enter输入回车(0x0d,0x0a)；\r输入0x0d,\n输入0x0a）

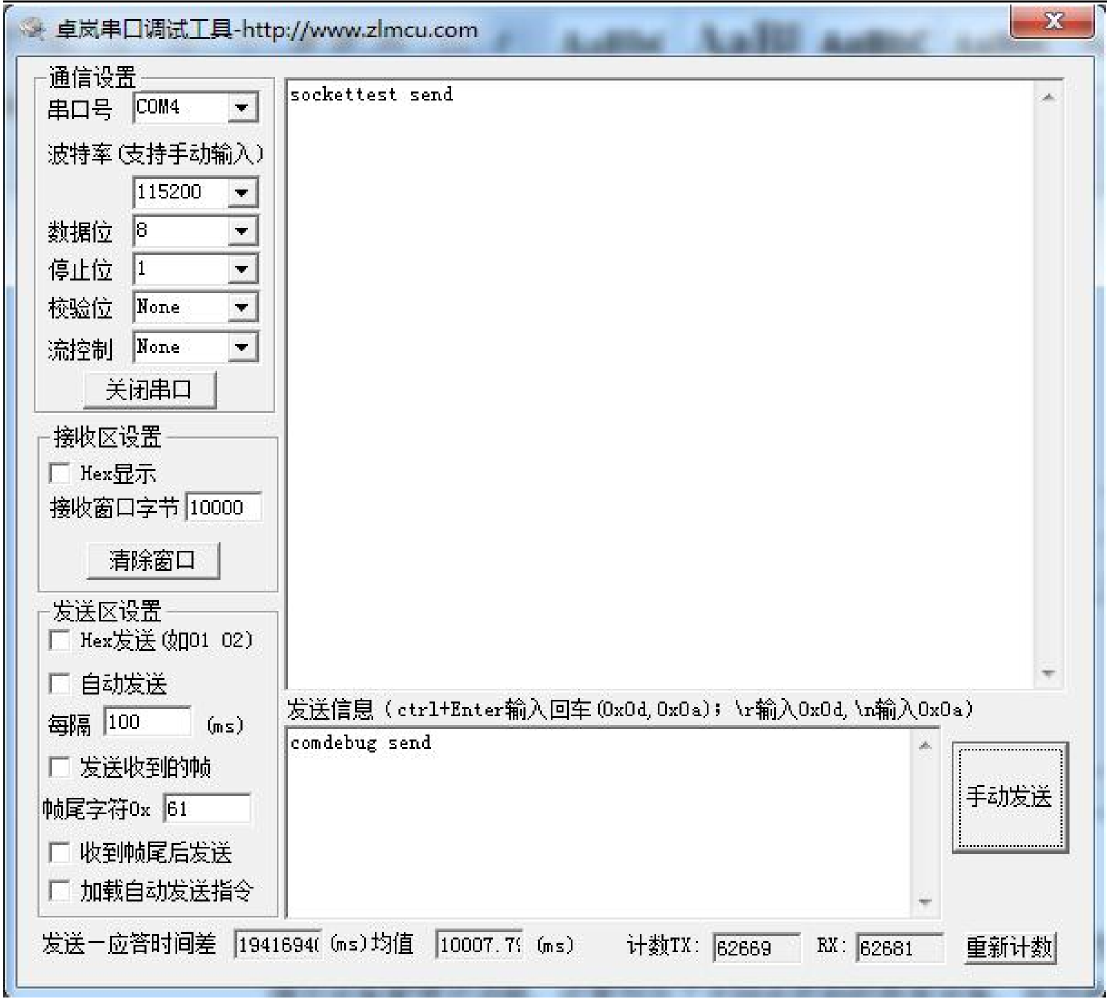
```
sockettest send
```

报告 ☐ 关闭报告

```
24743.289846(s) send TCP rcv from socket TCPClient

24735.215846(s) send TCP socket TCPClient Send OK!

24719.727377(s) send TCP socket TCPClient Send OK!

TCP client connected to 192.168.1.200:4196!
TCP client connectting 192.168.1.200(192.168.1.200):4196...
```

本地IP：192.168.1.188 计数和校验和 TXD：16 1447 RXD：13 1139

Figure 6 sockettest receive and send page



串口号 COM4
波特率 (支持手动输入) 115200
数据位 8
停止位 1
校验位 None
流控制 None

☐ Hex显示
接收窗口字节 10000

☐ Hex发送 (如01 02)
☐ 自动发送
每隔 100 (ms)
☐ 发送收到的帧
帧尾字符0x 61
☐ 收到帧尾后发送
☐ 加载自动发送指令

```
sockettest send
```

发送信息 (ctrl+Enter输入回车(0x0d,0x0a); \r输入0x0d,\n输入0x0a)

```
comdebug send
```

发送一应答时间差 1941694((ms)均值 10007.7((ms) 计数TX: 62669 RX: 62681

Figure 7 comdebug receive and send page

As shown in Figure 6 and Figure 7, the serial port and network port communicate transparently. If the serial port is connected to a user's serial port device, it can communicate with the serial port of the device through the TCP connection of the network for data collection and control。

4.4. Virtual serial port

The Ttest shown in Figure 5 is conducted by communicating with devices through TCP&UDP. In order to enable users to use the developed serial port software without modifying it to TCP communication, an additional step for converting COM interface to TCP is required between the user program and TCP. ZLVircom does just that.

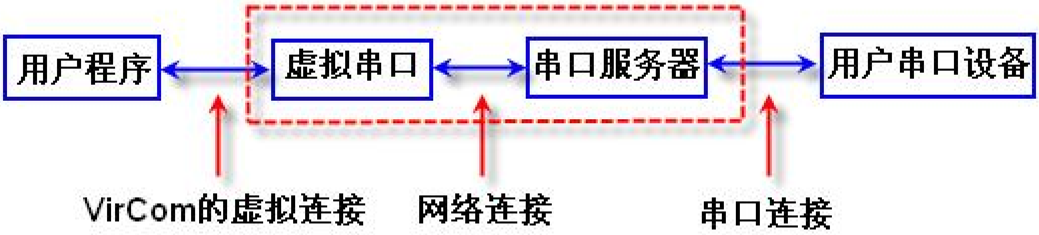
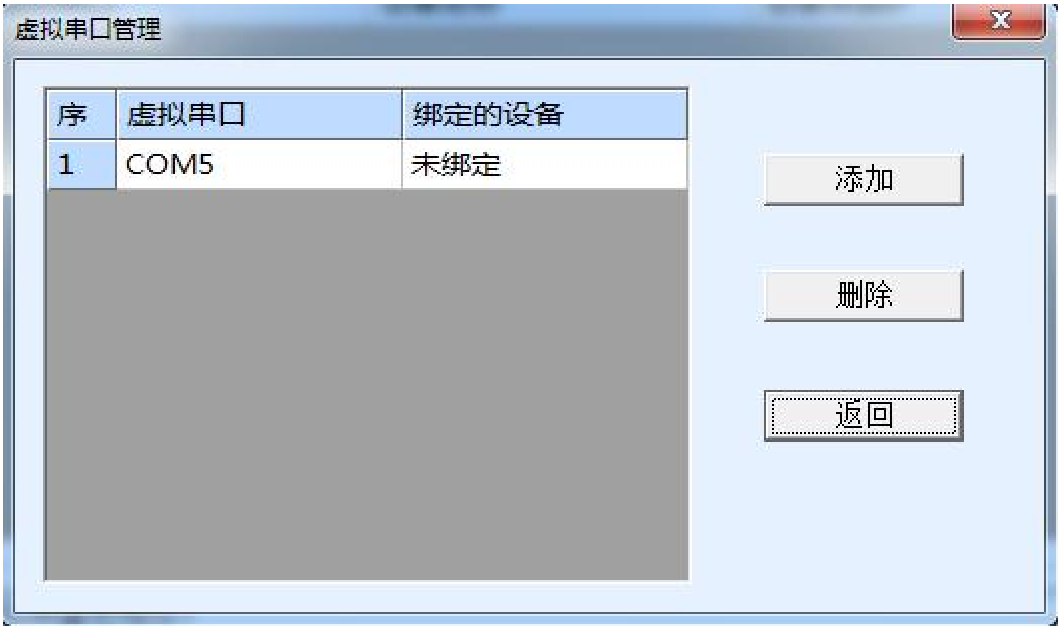


Figure 8 Functions of the virtual serial port

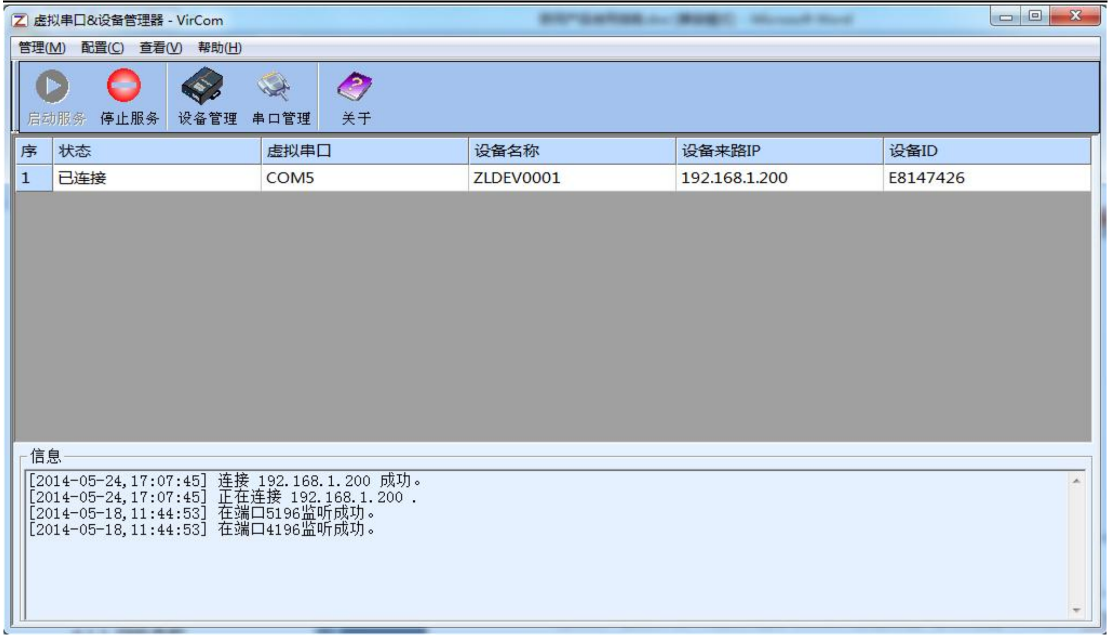
Click "Serial port management" in the main interface of ZLVircom, then click "Add", select to add COM5, where COM5 is the COM port that does not exist in the computer.



序	虚拟串口	绑定的设备
1	COM5	未绑定

Figure 9 Add virtual serial port

Then go to Device Management and double-click the device that you want to bind to COM5. As shown in Figure 4, select COM5 from the Virtual Serial Port list in the upper left corner. Then click "Modify Settings". And return to ZLVircom's main interface. You can see that COM5 has connected to the device whose IP address is 192.168.1.200. COM5 can be used instead of SocketTest to communicate at this time.

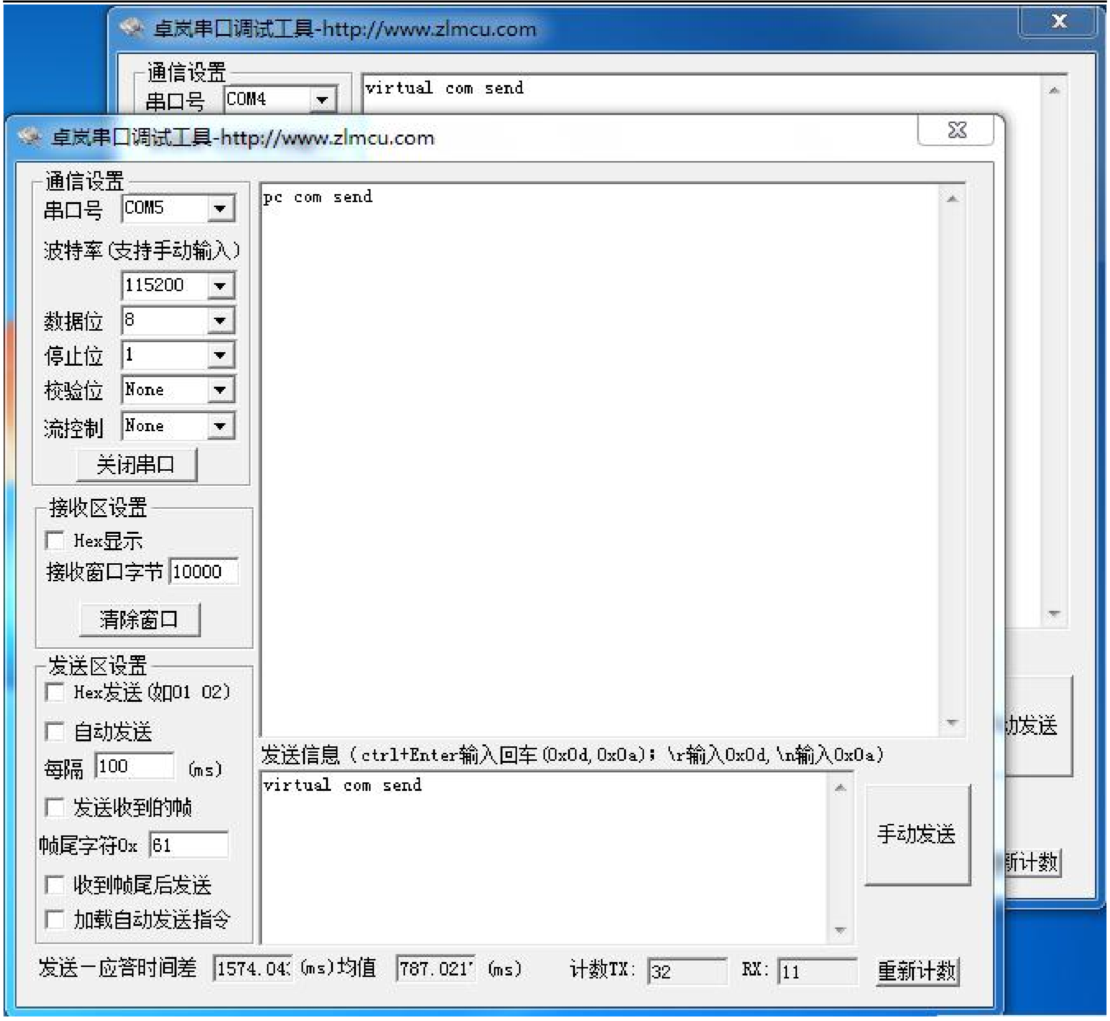


序	状态	虚拟串口	设备名称	设备来路IP	设备ID
1	已连接	COM5	ZLDEV0001	192.168.1.200	E8147426

```
[2014-05-24,17:07:45] 连接 192.168.1.200 成功。
[2014-05-24,17:07:45] 正在连接 192.168.1.200 .
[2014-05-18,11:44:53] 在端口5196监听成功。
[2014-05-18,11:44:53] 在端口4196监听成功。
```

Figure 10 The virtual serial port is connected

Now turn off the old SocketTest and turn on a new ZLComdebug as the user's serial program, now turn on COM5. At this time, COM5 (virtual serial port) and COM4 (hardware serial port) can send and receive data through the network product. If the serial port of the networked product is not connected to the COM port of the PC, but to a serial device, you can open the COM5 to communicate with the device. Only now it's through the Internet.


卓岚串口调试工具-http://www.zlmcu.com
通信设置
关闭串口
接收区设置
清除窗口
发送区设置
发送信息（ctrl+Enter输入回车(0x0d,0x0a)；\r输入0x0d,\n输入0x0a）
手动发送
重新计数

串口号 COM4

virtual com send

串口号 COM5

波特率(支持手动输入) 115200

数据位 8

停止位 1

校验位 None

流控制 None

☐ Hex显示

接收窗口字节 10000

☐ Hex发送(如01 02)

☐ 自动发送

每隔 100 (ms)

☐ 发送收到的帧

帧尾字符0x 61

☐ 收到帧尾后发送

☐ 加载自动发送指令

pc com send

virtual com send

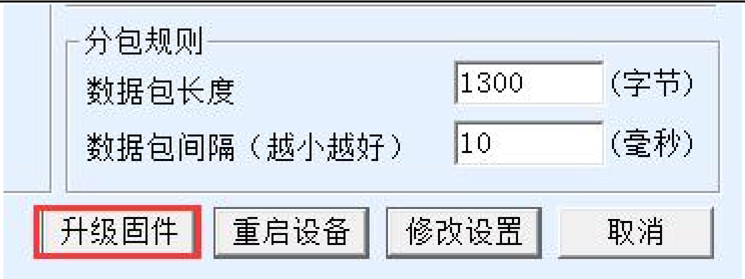
发送一应答时间差 1574.04: (ms)均值 787.021' (ms) 计数TX: 32 RX: 11

Figure 11 Communication through the virtual serial port

4.5. Firmware program installation

1 Get the Firmware program firmware file from Zlan, such as 1.443(2003).bin.

2 Open ZLVircom, click the "Device management" button, then click "automatic search", then select a device, click "Device edit", the "Device edit" dialog box pops up, there is a "upgrade firmware" button in the bottom right corner, click to enter.



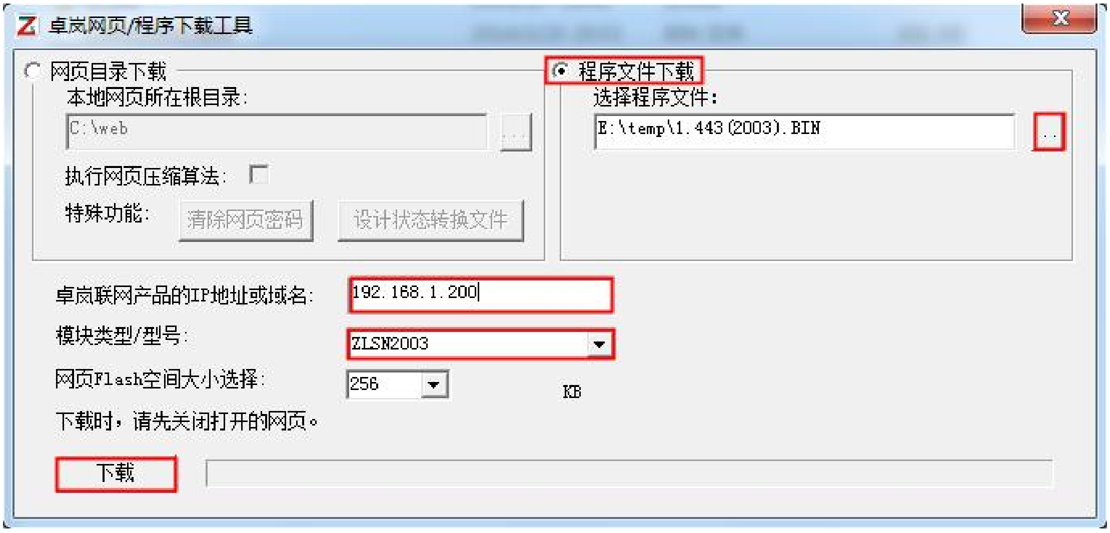
分包规则

数据包长度 1300 （字节）

数据包间隔（越小越好） 10 （毫秒）

Figure 12 upload firmware

3 As shown in Figure 13, select the Program File Download option. In the program file, select the Firmware file. Enter ZLSN2003S device IP address, module type/model select ZLSN2003. Then click Download.



选择程序文件: E:\temp\1.443(2003).BIN

卓岚联网产品的IP地址或域名: 192.168.1.200

模块类型/型号: ZLSN2003

网页Flash空间大小选择: 256 KB

下载时，请先关闭打开的网页。

Figure 13 ZLSN2003 firmware upgrade method

4 At this time, the download progress bar starts to move, and the download time is about 20 seconds. During the download process, you will see the ACT light of the device blink, and at the end of the download, you will see the LINK light blink several times. Then the program pop-up "download success" prompt box. Click OK to complete the download.

5 After the download is complete, the general program will automatically restart and see the running light flashing. If it does not restart automatically, note: Wait at least 5 seconds and power it on again.

6 Note: If the download fails, it will not damage the device, please restart the download. If the download fails several times, use the cable directly connected to the computer to download. In addition, at the end of the download, when the

green light flashes, do not power off, otherwise the device will be damaged. ZLVircom checks the firmware version number to see if the new firmware has been downloaded successfully.

7 After the firmware upgrade, the configuration page inside the module must also be updated. Otherwise, the configuration cannot be performed through the Web. The method of downloading Web is: as shown in Figure 13, change the download mode of "program file" to "Web directory download". And select the root directory of the local web page as the directory where the web page file needs to be downloaded (the directory can be obtained from Zolan), click download, download all files under the local web page directory to the ZLSN2003 device internal file system.

5. Item number and function

In order to let users know the types of products corresponding to the product model you purchased, and what functions this type of product has, this section describes the command rules of Zlan products and the functions of each model.

5.1. Naming Rules

Figure 14 shows the product model definition of Zlan Networking：

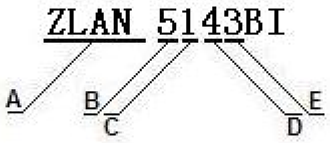


图 14 型号定义

表 3 型号定义的说明

Number	Name	Specifications
A	Includes case or not	ZLAN：Represents a finished product with an case ZLSN：Indicates a circuit board module without a case
B	device type	1：Chips 2：core modul or RS232 port

		3：RS485/422 port or TTL interface 4：RS232 port 5：RS232/485 port、RS232/485/422 port 6：Remote IO device 7：WIFI devices 8：GPRS devices 9：Among them, item number starts from 91 are optical fiber products, 92 are RS232 converters, 93 are smart home development boards, 94 are 485HUB, 95 are Zigbee products, and 96 are Can bus products
C	serial port qty	0：core module 1：single serial port 2：2 serial ports 4：4 serial ports 8：8 serial ports
D	Submodels (see next section for details)	0：main item number 1：Simple function module 3：Web module 4：Modbus gateway module
E	Product hardware plan	0：ZLSN2000 2：ZLSN2002 3：ZLSN2003
suffix		

5.2. Device number and function

Table 4 lists the features supported by each seed model.

Table 4Function selection table

Item number	Name	**Web download**	**Domain name system**	**Realcom protocol**	**Modbus TCP to RTU**	**Serial control instruction**	**Automatic acquisition IP(DHCP)**	**Multi-tcp connection(100)**	**IO input an**	**UDP broadcast**	**Client TCP/UDP multipurpose IP**

									d output		
ZLSN2000 new (ZLSN2090)	Main item number	×	√	√	×	√	√	√	×	×	×
ZLSN2010	Simple module	×	×	×	×	√	×	×	√	√	×
ZLSN2030EX	Web download module	√	√	×	×	√	√	√	×	×	×
ZLSN2040	Modbus gateway module	×	√	×	√	×	√	√	×	×	×
ZLSN2000MDIP	Multipurpose IP	×	√	×	×	√	√	√	×	×	√
ZLSN2000 老	Old master model	×	√	√	×	√	√	×	(√)	(√)	×
ZLSN2002	Master type	×	√	√	×	√	√	√	√	√	×
ZLSN2012	Simple module	×	×	×	×	√	×	×	√	√	×
ZLSN2032EX	Web download	√	√	×	×	√	√	√	√	√	×

	module										
ZLSN2042	Modbus gateway module	×	√	√	√	×	√	√	×	×	×
ZLSN2002MDIP	Multipurpose IP	×	√	×	×	√	√	√	√	√	√

Item number	name	**Web download**	**Domain name system**	**Realcom protocol**	**Modbus TCP to RTU**	**Serial control instruction**	**Automatic acquisition IP(DHCP)**	**Multi TCP connection(100)**	**IO input output**	**UDP multicast**	**Client TCP/UDP multipurpose IP**
ZLSN2003	Master type	×	√	√	√	√	√	√	√	√	√
ZLSN2003W	Web control module	√	√	√	√	√	√	√	√	√	√

The sub-functions of the above table are described as follows：

1. Web download: can support web customized download.
2. Domain name system: The destination IP address can be a domain name.
3. Realcom protocol: A protocol specification for the virtual serial port. If the virtual serial port is not supported, the virtual serial port can be used.
4. Convert Modbus TCP to RTU: Supports the Modbus TCP gateway function.
5. Serial port control commands: Support AT-type serial port commands to control networked products and read the status of networked products.
6. Automatically obtain IP:
7. Multiple TCP connection: Whether multiple TCP clients are supported when the TCP server functions. Multiple connections support 100.
8. UDP multicast.

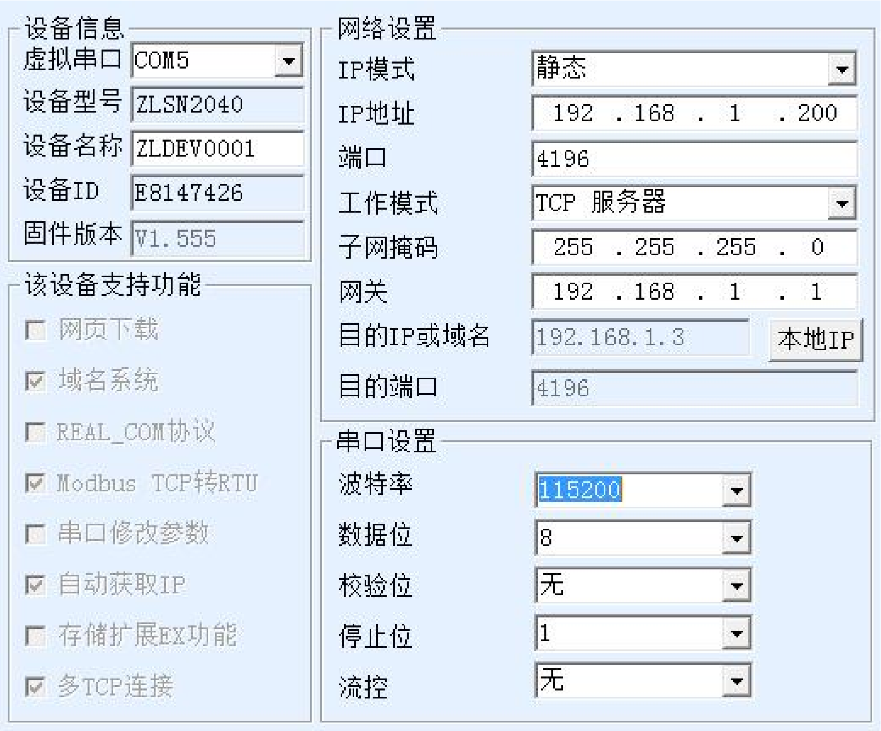
9. Multi-destination IP: Whether the UDP or TCP client can send or connect to multiple destination IP addresses. Multiple connections support 8.。

6. Parameter configuration

This section describes the meaning of device parameters and how to set them.

6.1. Parameter contents

All parameters of networked products can be seen through ZLVirCom's equipment management, as shown in FIG. 15 and FIG. 16. Parameters are saved in the flash space of networked products, and will be loaded when powered on, and will not be lost when powered off. The meanings of the parameters are described as follows:



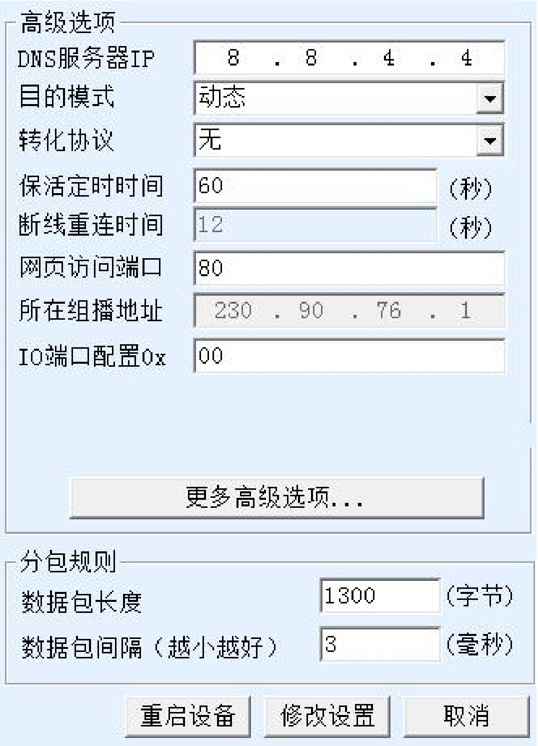
设备信息
虚拟串口 COM5
设备型号 ZLSN2040
设备名称 ZLDEV0001
设备ID E8147426
固件版本 V1.555

该设备支持功能
□ 网页下载
☑ 域名系统
□ REAL_COM协议
☑ Modbus TCP转RTU
□ 串口修改参数
☑ 自动获取IP
□ 存储扩展EX功能
☑ 多TCP连接

网络设置
IP模式 静态
IP地址 192 . 168 . 1 . 200
端口 4196
工作模式 TCP 服务器
子网掩码 255 . 255 . 255 . 0
网关 192 . 168 . 1 . 1
目的IP或域名 192.168.1.3
目的端口 4196

串口设置
波特率 115200
数据位 8
校验位 无
停止位 1
流控 无

Figure 15 Basic parameter



DNS服务器IP 8 . 8 . 4 . 4
目的模式 动态
转化协议 无
保活定时时间 60 (秒)
断线重连时间 12 (秒)
网页访问端口 80
所在组播地址 230 . 90 . 76 . 1
IO端口配置0x 00
数据包长度 1300 (字节)
数据包间隔（越小越好） 3 (毫秒)

Figure 16 Advanced parameter

parameter as followings：

Table 5 parameter contents

parameter	Value range	Contents
Virtual serial port	none, created virtual serial port	You can bind the current device to an existing virtual serial port.
device number	ZLSN2000、ZLSN2002、ZLSN2003、ZLSN2042、ZLSN2032EX 等	Only the model of the core module is displayed
device name	random	You can give the device an easy-to-read name, up to 9 bytes, support Chinese names.
Device ID		The factory unique ID cannot be modified.
firmware version		Firmware version of the core module
Features supported by the device		For details, see 5.2 Models and Functions.

IP mode	static、DHCP	Users can choose between static or DHCP (dynamic IP acquisition)
IP address		IP address of the networked product
Interface	0～65535	Listening port of the networked product in TCP Server or UDP mode. If you use port 0 as the client, you are advised to set port 0 to improve the connection speed. If port 0 is used, the system randomly assigns a local port. The difference between this and the specified non-zero port is: (1) When the local port is 0, a new TCP connection is established with the PC when the module restarts, and the old TCP connection may not be closed, so the old TCP connection of the upper computer can not be closed, and the specified non-zero port does not have this problem. Usually the host computer wants to close the old connection when the module restarts. (2) If the local port is 0, the TCP connection takes a shorter time to re-establish.
working mode	TCP Server (TCP server mode), TCP Client (TCP client mode), UDP mode, UDP multicast	If TCP Server is set to TCP Server, the network server must actively connect to networking products. If TCP Client is set, the networking product initiates connections to the network server specified by the destination IP address.
Subnet mask	eg：255.255.255.0	The subnet mask must be the same as that of the local LAN.
gateway	eg：192.168.1.1	It must be the same as the local LAN gateway. If the gateway is not connected to an external network (such as a computer connected to a network cable), you are advised to set the gateway to the IP address of the connected computer.
Destination IP		In TCP Client or UDP mode, data is sent to the

address or domain name		computer indicated by the destination IP or domain name.
Destination port		In TCP Client or UDP mode, data is sent to the destination port of the destination IP address.
Baud rate	1200、2400、4800、7200、9600、14400、19200、28800、38400、57600、76800、115200、230400、460800	serial port baud rate
digit bits	5、6、7、8、9	
check bits	None、Even、Odd、Mark、Space	
stop bits	1、2	
Flow control	None（no flow control）、CTS/RTS、DTR/DCR、XON/XOFF	RS232 serial port valid
DNS server		If the destination computer is described by a domain name, the DNS server needs to resolve the domain name. The IP address of the DNS server is specified here. If the IP address mode is DHCP, you do not need to specify this parameter.
Destination mode	Static and dynamic	UDP working mode: Static mode is the best choice if the destination computer is described by the domain name; If there are multiple computers on the LAN communicating with the networked product over UDP, it is best to choose dynamic mode. In TCP server mode, the parameter must be dynamic. In TCP client mode: When the IP address mode is dynamic, the destination IP address of each

		reconnection is the reconnection after the device is restarted. In this way, the correct IP address can be obtained again. Otherwise, the device is directly connected and does not automatically restart.
transfer protocol	NONE 、 Modbus TCP<->RTU、Real_COM	NONE indicates that data is transmitted transparently from the serial port to the network. Modbus TCP<->RTU will convert Modbus TCP protocol directly into RTU protocol, which is convenient to cooperate with Modbus TCP protocol; RealCOM is designed to be compatible with older versions of the REAL_COM protocol.
Keepalive timing	0～255	(1) If the value ranges from 1 to 255 and the device is in TCP client working mode, the device automatically sends TCP heartbeat packets at Keepalive intervals. This ensures the TCP validity of the link. If the value is set to 0, there is no TCP heartbeat. (2) If the value is set to 0 to 254, and the conversion protocol is REAL_COM, the device will send data with length 1 and content 0 at keepalive intervals to implement the heartbeat mechanism in the Realcom protocol. If the value is set to 255, there is no realcom heartbeat. (3) When the value is set to 0 to 254, if the device works on the TCP client, the device will send device parameters to the destination computer at keepalive intervals. If the value is set to 255, no parameter sending function is available. This mechanism is not usually used, and the user should not care.
Disconnected reconnection time	0～255	Once the networking product in TCP client mode is disconnected from the server (that is, as long as it is not connected), it sends a TCP connection to the

		server at intervals. The interval is the disconnection and reconnection time, which can range from 0 to 254 seconds. If 255 is set, it means that the connection is never reconnected. Note that the first TCP connection is usually made immediately (such as hardware power-on, device restart through zlvircom software, and no data), and only after the first connection fails, it will wait for the "disconnection time" and then try again, so the "disconnection time" does not affect the connection establishment time between the network and the server under normal circumstances.
Web access port	1～65535	
Indicates the multicast address		This parameter is used for UDP multicast
IO interface configuration		The level of the PIN pin of the core module can be configured, refer to the relevant documentation.
Packet length	1～1400	One of the serial port framing rules. After receiving this length of data, the serial port of the networked product sends the received data to the network as a frame.
Packet interval	0～255	One of the serial port framing rules. When the data received by the serial port of the networked product pauses and the pause time is longer than the threshold, the received data is sent to the network as a frame.

6.2. Revise parameter method

6.2.1. ZLVirCom method

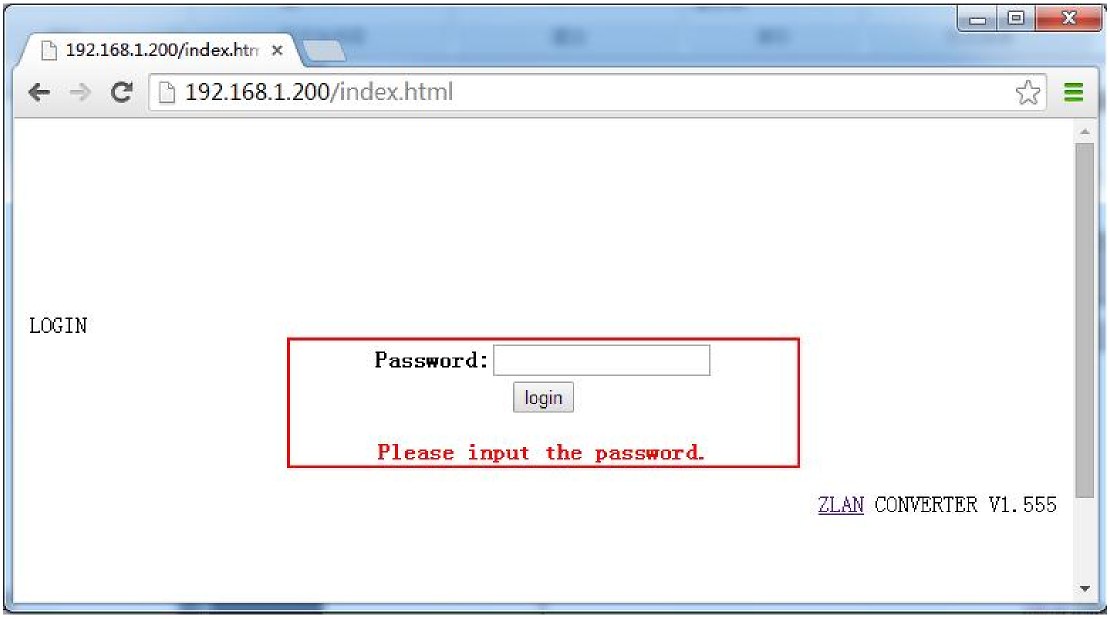
ZLVircom Search through the network, find the device and edit the device parameters. Its advantages are：

1. PCS and networked products do not need to reside on the same IP network segment.
2. You can modify parameters even if IP conflicts exist in networked products.
3. It is not necessary to know the IP address of the networked product in advance.
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 Web login.

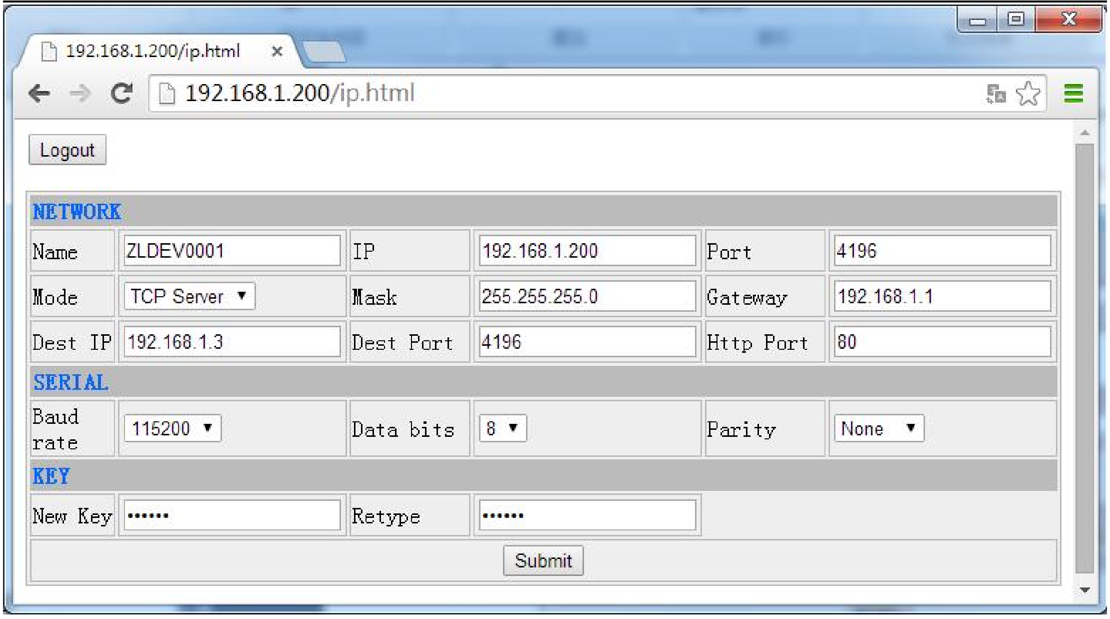
1. Enter the IP address of the Internet-connected product in your browser, such as http://192.168.1.200, to open the following page.



Please input the password.

Table 17

2. Enter the Password in Password. The default password is 123456. Click the login button to sign in.



NETWORK					
Name	ZLDEV0001	IP	192.168.1.200	Port	4196
Mode	TCP Server	Mask	255.255.255.0	Gateway	192.168.1.1
Dest IP	192.168.1.3	Dest Port	4196	Http Port	80
SERIAL					
Baud rate	115200	Data bits	8	Parity	None
KEY					
New Key	••••••	Retype	••••••		

Table 18

3. You can modify the network product parameters in the Web page that appears. Except for the Web login password parameter, other parameters have been described in 6.1 Parameter Meaning. The Web login password is the password for logging in to the web page.
4. Click the "Submit Modification" button after modifying the parameters.
5. After the modification, please click the "Log out" button. If you do not log out, anyone can enter the configuration interface.

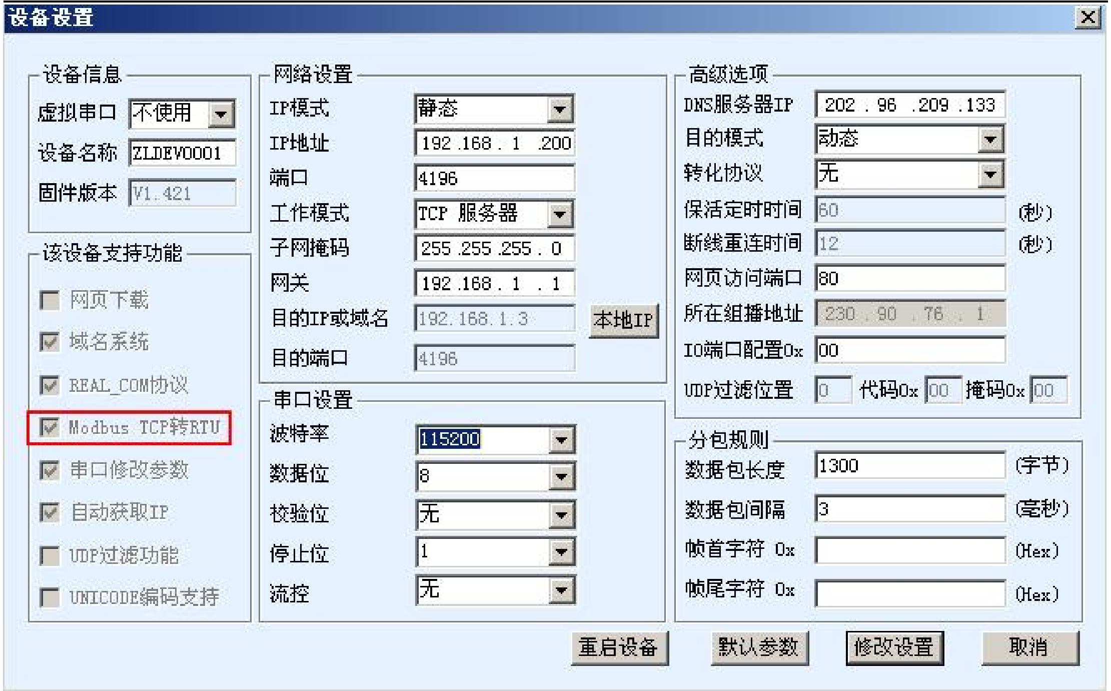
7. Product advanced usage

7.1. Modbus TCP to RTU

Only ZLAN5142, ZLAN2140, ZLAN3140 and other products with sub-model 4 support the Modbus TCP to Modbus RTU function (Modbus gateway function). ZLAN5142 is used as an example.

7.1.1. Identifying gateway functions

Click "Device management" in the main interface of ZLVircom software, select the device after finding the device, and click "Device Edit". The parameter setting dialog box that pops up is shown in Figure 19.


设备设置

设备信息
虚拟串口 不使用
设备名称 ZLDEV0001
固件版本 V1.421

该设备支持功能
☐ 网页下载
☑ 域名系统
☑ REAL_COM协议
☑ Modbus TCP转RTU
☑ 串口修改参数
☑ 自动获取IP
☐ UDP过滤功能
☐ UNICODE编码支持

网络设置
IP模式 静态
IP地址 192.168.1.200
端口 4196
工作模式 TCP 服务器
子网掩码 255.255.255.0
网关 192.168.1.1
目的IP或域名 192.168.1.3
目的端口 4196

串口设置
波特率 115200
数据位 8
校验位 无
停止位 1
流控 无

高级选项
DNS服务器IP 202.96.209.133
目的模式 动态
转化协议 无
保活定时时间 60 (秒)
断线重连时间 12 (秒)
网页访问端口 80
所在组播地址 230.90.76.1
IO端口配置0x 00
UDP过滤位置 0 代码0x 00 掩码0x 00

分包规则
数据包长度 1300 (字节)
数据包间隔 3 (毫秒)
帧首字符 0x (Hex)
帧尾字符 0x (Hex)

Table 19 4 Sub-model identification

If the box on the left of the Modbus TCP to RTU function has been checked, the Modbus gateway function is supported.

7.1.2. Start Modbus gateway

By default, the Modbus gateway is in the common transparent mode. To switch to the Modbus gateway mode, select Modbus TCP<->RTU in Conversion Protocol. The device automatically changes Port to 502 (port of the Modbus server).

If the Modbus server is used as a common Modbus server, change Working Mode to TCP server. If the Modbus client is changed to the TCP client and the destination IP address is set to the IP address of the server, the destination port is usually 502.

Generally, the ZLAN5142 is used as a Modbus server, so that the PC software only needs to connect to the IP address where the ZLAN5142 is located, and read and write registers to achieve communication with the RTU device.

If the serial port is the primary station of the RTU, and 5142 is connected to a Modbus TCP server. In this case, change the working mode to TCP Client. In addition, in this working mode, it is best to reduce the idle RS485 bus to about 5ms. The setting of this parameter is to enter "More Advanced Options", you can see the idle

RS485 bus.

7.2. Different working modes and parameters

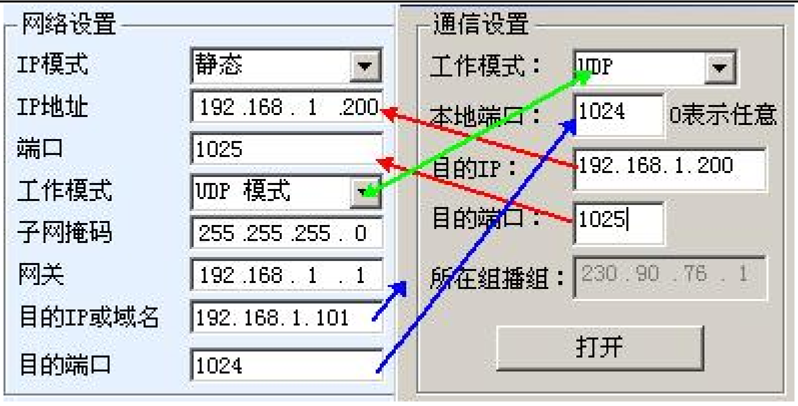
The section "4.3 Transparent Communication" focuses on how networked products communicate when they act as TCP servers. This section describes how the TCP client, UDP mode and computer software communicate with another networking module parameter configuration method. The computer software uses SocketTest as an example.

Zlan networking products comply with the standard TCP/IP protocol, so any network terminal that complies with the protocol can communicate with the networking products, Zlan technology provides network debugging tools (SocketDlgTest program, users can in the start menu/program /ZLVircom/ debugging tools, Find the software) to simulate network terminals to communicate with networked products.

For two network terminals (in this case, the network debugging tool and the networking product) to communicate, their parameter configurations must be paired.

7.2.1. UDP mode

In UDP mode, the parameter configuration is shown in Figure 20. The left side is the configuration of networked products in vircom, and the right side is the configuration of network debugging tool SocketDlgTest. First, both must be in UDP working mode. In addition, the destination IP address and destination port of the network tool must point to the local IP address and local port of the networked product. The destination IP address of the networking product must be the IP address of the computer where the networking tool is located, and the destination port of the networking product must be the local port of the network debugging tool. These network parameters must be configured to ensure two-way UDP data communication.



IP模式 静态
IP地址 192 .168 . 1 .200
端口 1025
工作模式 UDP 模式
子网掩码 255 .255 .255 . 0
网关 192 .168 . 1 . 1
目的IP或域名 192.168.1.101
目的端口 1024

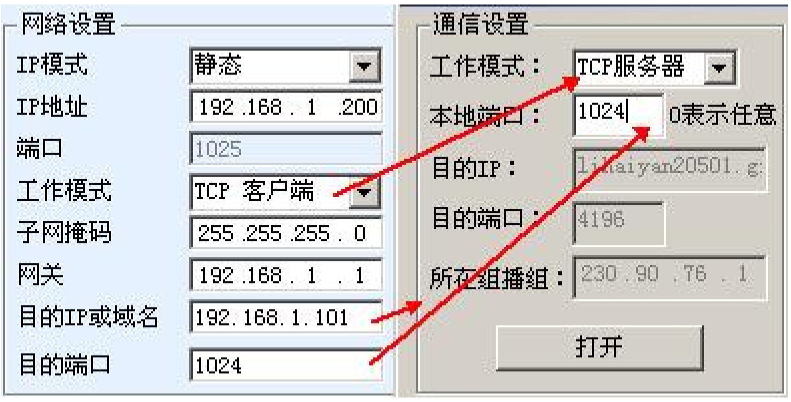
工作模式： UDP
本地端口： 1024 0表示任意
目的IP： 192.168.1.200
目的端口： 1025
所在組播組： 230 . 90 . 76 . 1

Table 20 UDP mode parameter configuration

7.2.2. TCP mode

There are two types of TCP server and TCP client in TCP mode, no matter which mode is used, one side must be the server, the other side is the client, and then the client can access the server, and the client or the server can not achieve communication.

When a networked product acts as a client, there must be three relationships, as shown in Figure 21. The working mode of the networking product is the server mode of the network tool corresponding to the client. The destination IP address of the networking product must be the IP address of the computer where the network tool is installed, and the destination port of the networking product must be the local port of the network tool. After this setting, the networking product can automatically connect to the network tool, and you can send and receive data after the connection is established.

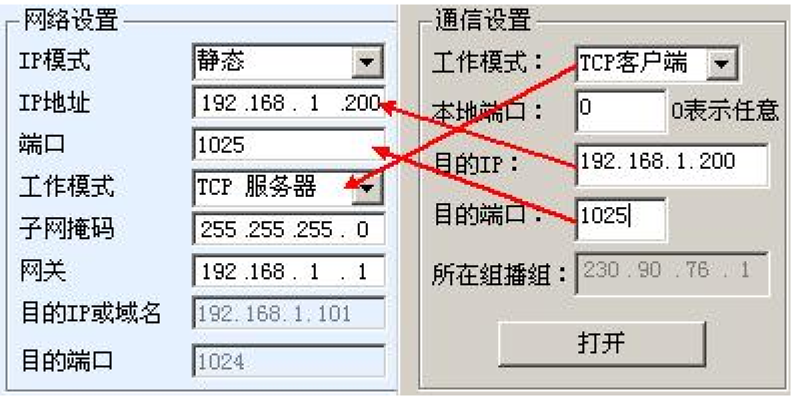


IP模式 静态
IP地址 192 .168 . 1 .200
端口 1025
工作模式 TCP 客户端
子网掩码 255 .255 .255 . 0
网关 192 .168 . 1 . 1
目的IP或域名 192.168.1.101
目的端口 1024

工作模式： TCP服务器
本地端口： 1024 0表示任意
目的IP： lihaiyan20501.g
目的端口： 4196
所在組播組： 230 . 90 . 76 . 1

Table 21 Networked products as clients

When the networked product acts as the server, there are also three corresponding relationships, as shown in Figure 22, which are not explained here. After this setting, click the open button of the network tool to establish a TCP connection with the networking product. After the connection is established, you can send and receive data.



网络设置
IP模式 静态
IP地址 192.168.1.200
端口 1025
工作模式 TCP 服务器
子网掩码 255.255.255.0
网关 192.168.1.1
目的IP或域名 192.168.1.101
目的端口 1024

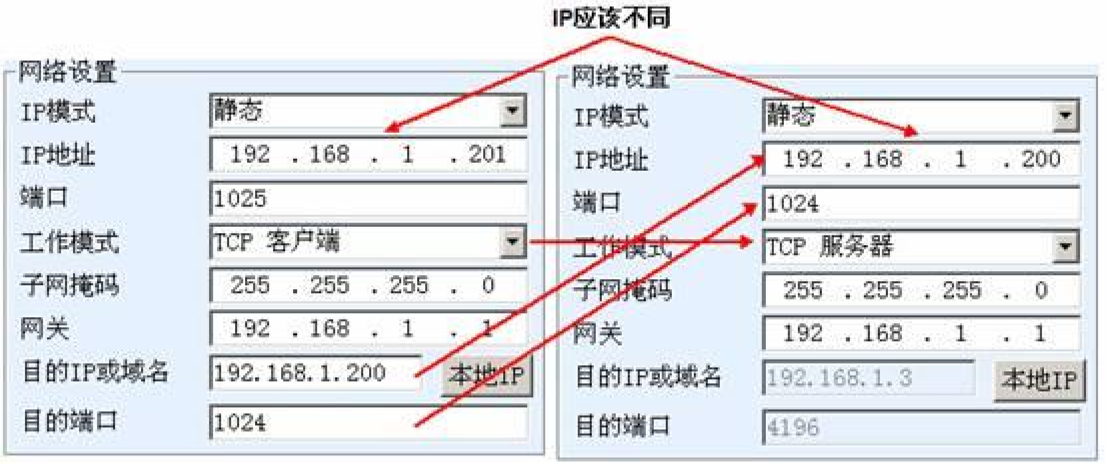
通信设置
工作模式：TCP客户端
本地端口：0 0表示任意
目的IP：192.168.1.200
目的端口：1025
所在组播组：230.90.76.1

Table 22 Networked products as servers

7.2.3. Couplet mode

If the upper computer is not a Socket program (SocketDlgTest) or ZLVircom, but two devices are connected through network ports, the configuration method is similar. First, the user needs to connect two devices and computers to the same LAN. The computer runs ZLVircom (or ZLDevManage), and the purpose of connecting the computer is only for configuration, and the computer does not need to be connected after configuration.

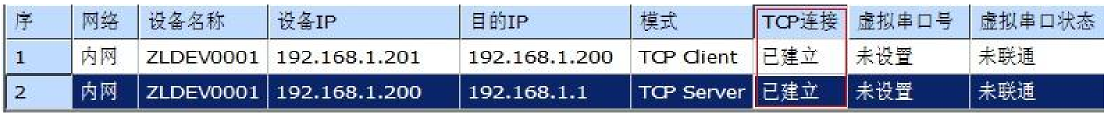
Click on ZLVircom's device management to find these two devices, as shown in Figure 24. Then click "Device Edit" to configure the device. Device pairs can be classified into TCP pairs and UDP pairs. In TCP interconnection mode, the parameters of the two devices are shown in Figure 23. The parameters shown by the arrows must correspond to each other, just as they correspond to the PC connection. After the TCP connection is successful, you can return to the Device Management dialog box to check the connection status, as shown in Figure 24. If the status of both devices is Connected, the TCP link between the two devices has been established.



IP模式 静态
IP地址 192.168.1.201
端口 1025
工作模式 TCP 客户端
子网掩码 255.255.255.0
网关 192.168.1.1
目的IP或域名 192.168.1.200
目的端口 1024

IP模式 静态
IP地址 192.168.1.200
端口 1024
工作模式 TCP 服务器
子网掩码 255.255.255.0
网关 192.168.1.1
目的IP或域名 192.168.1.3
目的端口 4196

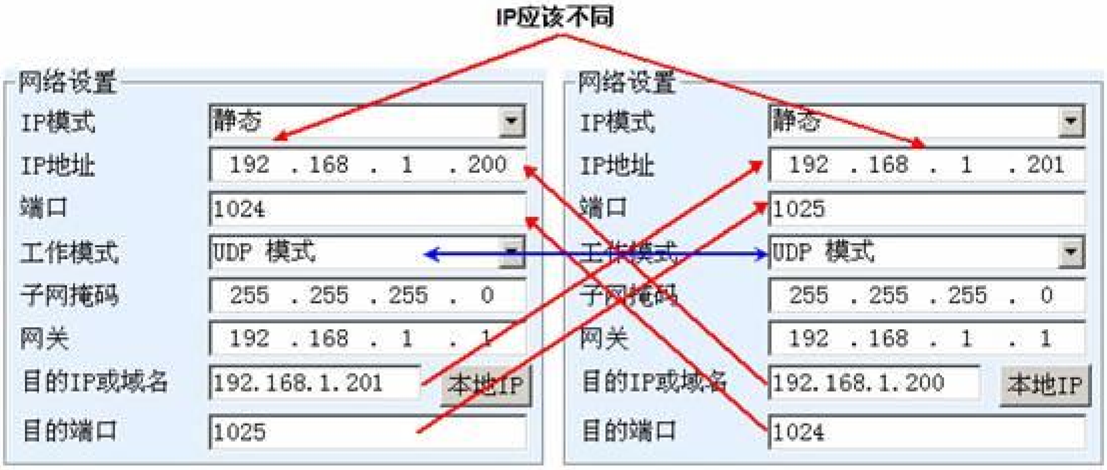
Table 23 TCP Configure device pairing parameters



序	网络	设备名称	设备IP	目的IP	模式	TCP连接	虚拟串口号	虚拟串口状态
1	内网	ZLDEV0001	192.168.1.201	192.168.1.200	TCP Client	已建立	未设置	未联通
2	内网	ZLDEV0001	192.168.1.200	192.168.1.1	TCP Server	已建立	未设置	未联通

Table 24 TCP The device interconnection is successfully checked

For UDP couplings, the configuration parameters are shown in Figure 25. The parameters corresponding to the arrows must be one-to-one. UDP pair connection Data is automatically sent to the specified device if the parameters are correctly configured without checking the connection status.



IP模式 静态
IP地址 192.168.1.200
端口 1024
工作模式 UDP 模式
子网掩码 255.255.255.0
网关 192.168.1.1
目的IP或域名 192.168.1.201
目的端口 1025

IP模式 静态
IP地址 192.168.1.201
端口 1025
工作模式 UDP 模式
子网掩码 255.255.255.0
网关 192.168.1.1
目的IP或域名 192.168.1.200
目的端口 1024

Table 25 UDP Configure device pairing parameters

Finally, you need to remind that if the device is in pair, in addition to the network port parameters according to the above Settings, you must also set the correct serial port parameters. Mainly, the baud rate of networking products needs to be consistent with the baud rate of the user's device. After this setting, user devices can send data to each other through the serial ports of the two networked products.

7.3. Cross-internet monitoring Settings

This paper takes the PLC remote monitoring across the Internet as an example to explain the cross-Internet setting method of Zlan networking products. In Internet-based PLC monitoring, PLCS are generally distributed all over the world, and there is only one remote computer. At this point we set the serial server in Figure 26 as the TCP client and the destination IP or domain name as the remote computer.

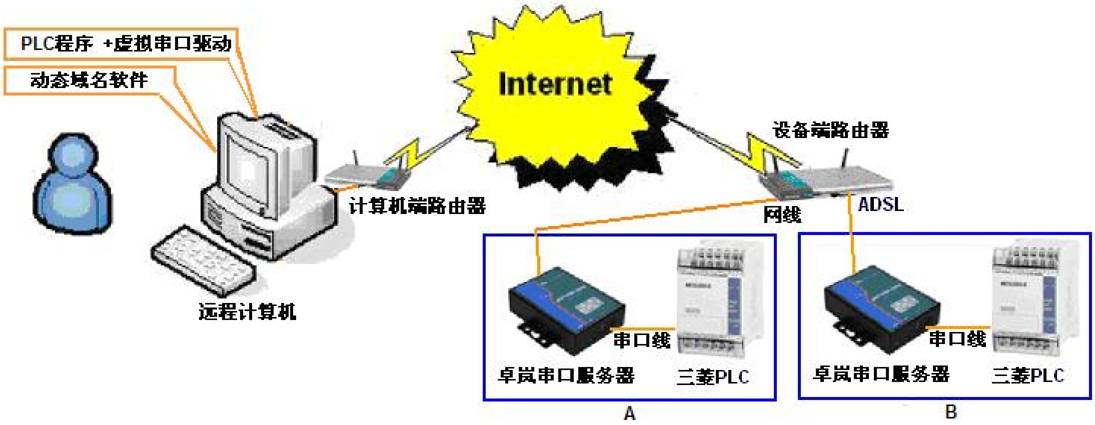


Table 26Device remote control diagram

When the serial server is connected to the remote computer, these serial servers will appear in the ZLVircom device list of the remote computer, and you can communicate by binding them with the corresponding virtual serial port.

Specific operations are as follows：

7.3.1. Dynamic Domain name System

Install CD-ROM software PhDDNS_6.0.0.8934.exe. After installation, run the software on your desktop.

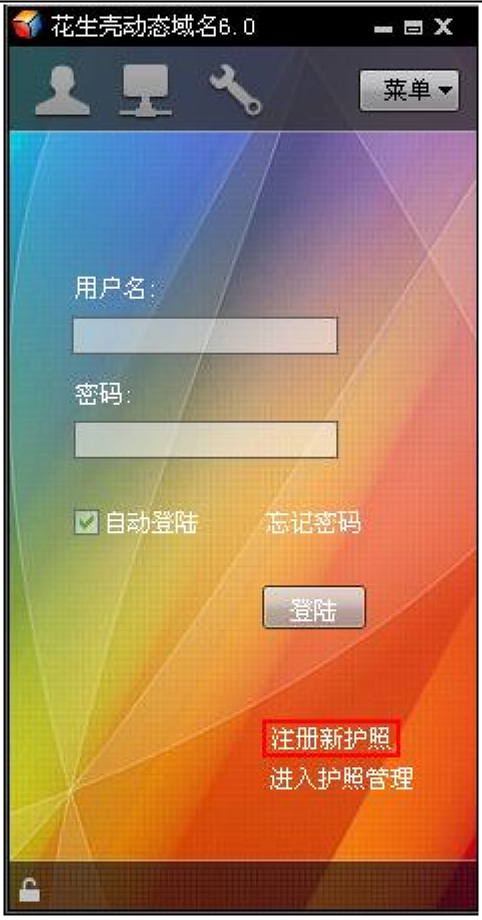


Table 27 Dynamic domain name System interface

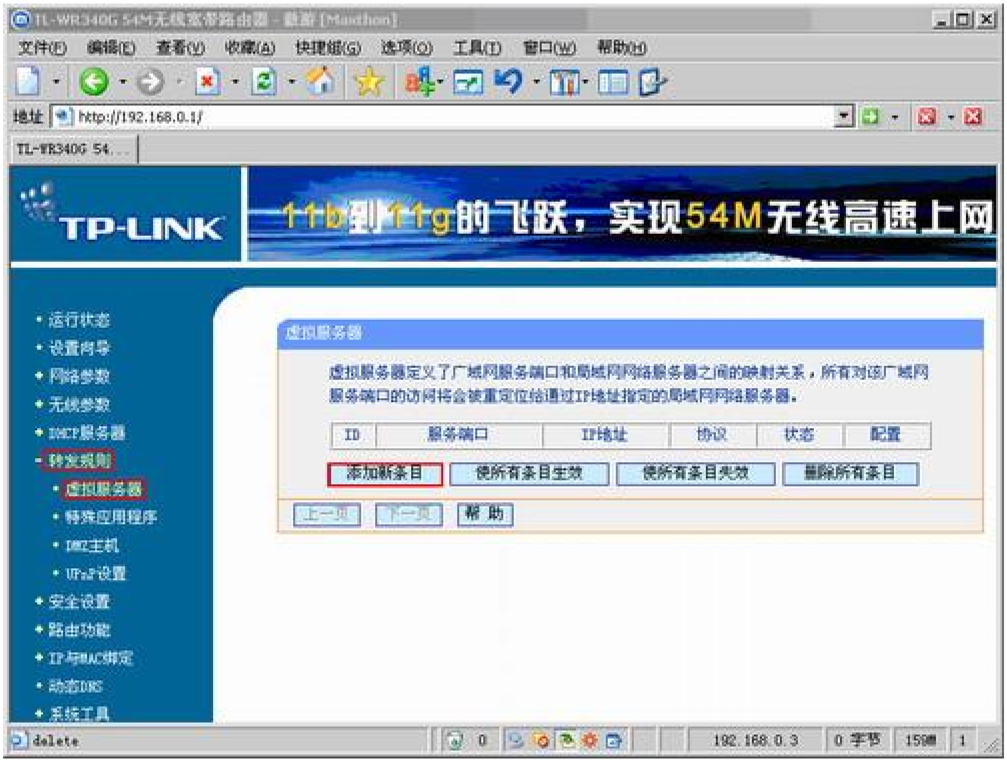
Click "Register a new passport" in Figure 27 and follow the prompts to register. For example, after registration, you get a passport with yourname, then log in with yourname in Figure 27. After logging in, the domain name of the router on your local area network (the router on the computer side in Figure 26) is yourname.gicp.net (gicp.net may vary depending on when the peanut shell was registered).

7.3.2. Port Mapping

If your remote computer is connected to the Internet through a router, you need to perform the following Settings. You only need to do this on the computer, without mapping on the device. If you dial up or connect to the broadband Modem directly (that is, you need to enter the ADSL user name and password on the computer to access the Internet), port mapping is not required.

After logging in to the dynamic domain name your name, the serial server can use the domain name yourname.gicp.net to find the router on the remote computer's network. Zlan PLC remote monitoring uses TCP and UDP port 4196. Now you need to tell your router that if the serial server accesses port 4196 of yourname.gicp.net, then forward it to the remote computer. This forwarding is called port mapping.

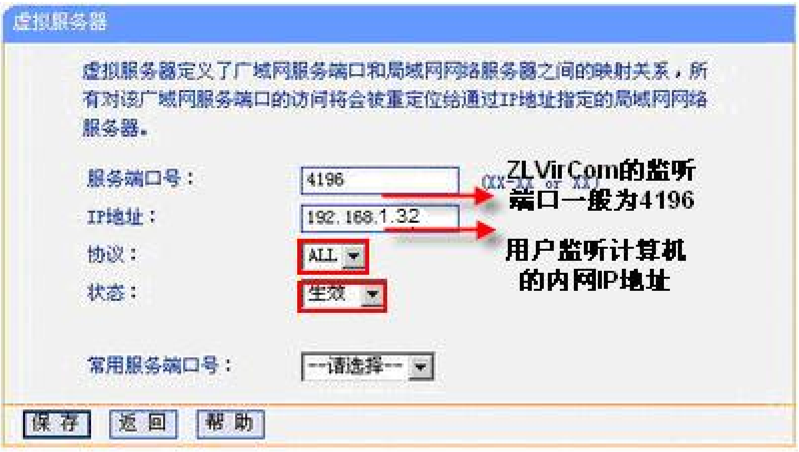
This section uses TP-LINK's TL-WR340G+ ADSL router as an example to describe how to set the router. Log in to the router (generally, you can open the router by typing http://192.168.1.1 in the browser address bar, and then enter the default user name admin and password admin), enter the menu "Forwarding Rules"/" Virtual Server ", and click "Add new entry".”


文件(F) 编辑(E) 查看(V) 收藏(A) 快捷组(G) 选项(O) 工具(T) 窗口(W) 帮助(H)
地址 http://192.168.0.1/
TL-WR340G 54...
TP-LINK
11b到11g的飞跃，实现54M无线高速上网
运行状态
设置向导
网络参数
无线参数
DHCP服务器
转发规则
虚拟服务器
特殊应用程序
DMZ主机
UPnP设置
安全设置
路由功能
IP与MAC绑定
动态DNS
系统工具
虚拟服务器
添加新条目
使所有条目生效
使所有条目失效
删除所有条目
上一页
下一页
帮 助
delete
192.168.0.3

虚拟服务器定义了广域网服务端口和局域网网络服务器之间的映射关系，所有对该广域网服务端口的访问将会被重定位给通过IP地址指定的局域网网络服务器。

ID	服务端口	IP地址	协议	状态	配置

Table 28 Setting port mapping Step 1



虚拟服务器定义了广域网服务端口和局域网网络服务器之间的映射关系，所有对该广域网服务端口的访问将会被重定位给通过IP地址指定的局域网网络服务器。

服务端口号： 4196 (XX-XX or XX)

IP地址： 192.168.1.32

协议： ALL

状态： 生效

常用服务端口号： --请选择--

ZLVirCom的监听端口一般为4196

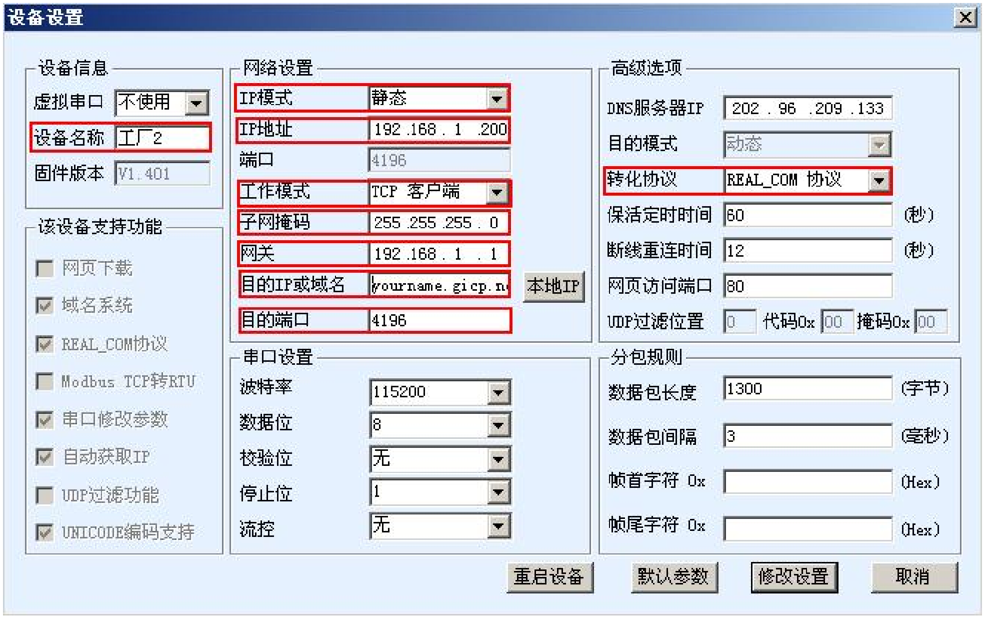
用户监听计算机的内网IP地址

Table 29 Setting port mapping Step 2

The IP address is the Intranet IP address of the computer, and the IP address of the computer can be obtained in a variety of ways. Click Save in Figure 29. Note that the IP address of the remote computer should be static, not automatically obtained.

7.3.3. Device configuration

You can set parameters of the serial port server before sending it to the site, and then power it on onsite. In addition, you can configure serial port server parameters onsite. ZLVircom software's "Device management/editing device" is used to configure parameters, as shown in Figure 30.



虚拟串口 不使用
设备名称 工厂2
固件版本 V1.401

☐ 网页下载
☑ 域名系统
☑ REAL_COM协议
☐ Modbus TCP转RTU
☑ 串口修改参数
☑ 自动获取IP
☐ UDP过滤功能
☑ UNICODE编码支持

IP模式 静态
IP地址 192.168.1.200
端口 4196
工作模式 TCP 客户端
子网掩码 255.255.255.0
网关 192.168.1.1
目的IP或域名 yourname.gicp.n
目的端口 4196

波特率 115200
数据位 8
校验位 无
停止位 1
流控 无

DNS服务器IP 202.96.209.133
目的模式 动态
转化协议 REAL_COM 协议
保活定时时间 60 (秒)
断线重连时间 12 (秒)
网页访问端口 80
UDP过滤位置 0 代码0x 00 掩码0x 00

数据包长度 1300 (字节)
数据包间隔 3 (毫秒)
帧首字符 0x (Hex)
帧尾字符 0x (Hex)

Table 30 Set parameters for cross-Internet serial port servers

1. IP mode: If there is a DHCP server on the field network (a general router has the DHCP server function), you can choose the IP mode to be dynamic, and you can automatically obtain IP. Omit the following IP setup steps.
2. IP Settings: If the IP address mode is static, you must set the IP address, subnet mask, and gateway correctly. You can ask the plant site network management to obtain the above parameters. If you have multiple serial servers, set different IP addresses, that is, the last field of the IP address is different (for example, 192.168.1.200, 192.168.1.201, etc.).
3. Working mode: Set to TCP client.
4. Destination Domain name or IP: This is the domain name you requested in Step 7.3.1 Dynamic Domain Name System, such as yourname.gicp.net, so that the serial server can find the remote server.
5. Destination port: The value must be 4196.
6. Conversion protocol: If the firmware version of 1.463 must be set to Realcom, select this protocol to prevent network disconnection during cross-Internet monitoring. Use the "none" protocol for higher versions.
7. Device name: Please change the device name so that you can identify the device on the remote computer.
8. Serial port parameters: You can also set serial port parameters.

After the preceding parameters are set, connect hardware cables onsite, as shown in Figure 26.

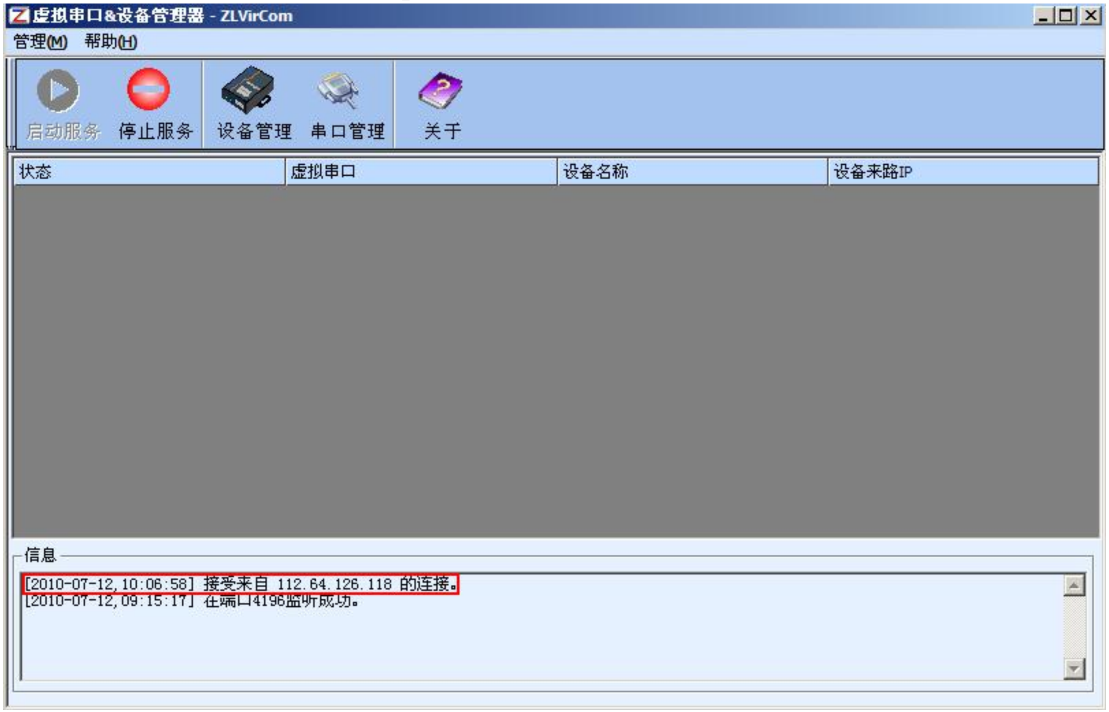
1．one Preparation on the remote computer:

    a) Use the dynamic domain name System to log in to the domain name you have applied for. In this way, the remote serial server can immediately find the router of the remote computer.

    b) Do a good port mapping so that the remote computer's router can forward monitoring data to your remote monitoring computer.

Run Zlan virtual serial port software ZLVircom on a remote computer. If it is already running, you can find the icon in the lower right corner of the taskbar.

Double-click the icon. Within a few seconds, there should be "Accept from... The "connection" prompt is shown in Figure 31. This indicates that the field serial server is connected to the remote computer.

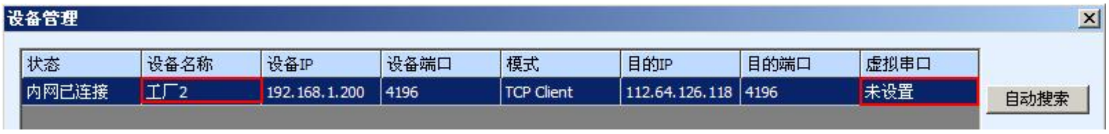


[2010-07-12,10:06:58] 接受来自 112.64.126.118 的连接。
[2010-07-12,09:15:17] 在端口4196监听成功。

Table 31 ZLVircom software page

4． Create a virtual serial port: Click on Figure 31 "Serial Port Management" and add an unused serial port number, such as COM6.

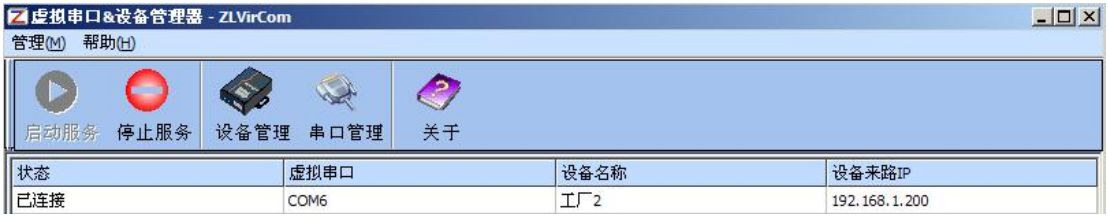
5． To view the list of devices: click on Figure 31 "Device Management" and if "Accept from... The "Connection" message displays one or more lines of records, each indicating a serial port server. From the device name "Factory 2" the user can tell which serial port server this is.



状态	设备名称	设备IP	设备端口	模式	目的IP	目的端口	虚拟串口
内网已连接	工厂2	192.168.1.200	4196	TCP Client	112.64.126.118	4196	未设置

Table 32 A list of listed devices

6．Bind the virtual serial port: Double-click the device in the device list and select the virtual serial port as the COM6 you just created in the dialog box shown in Figure 30. After returning to the main screen, you can see that COM6 has been bound to the device Factory 2. Then the user opens the COM6 and can communicate with the PLC of "Factory 2".



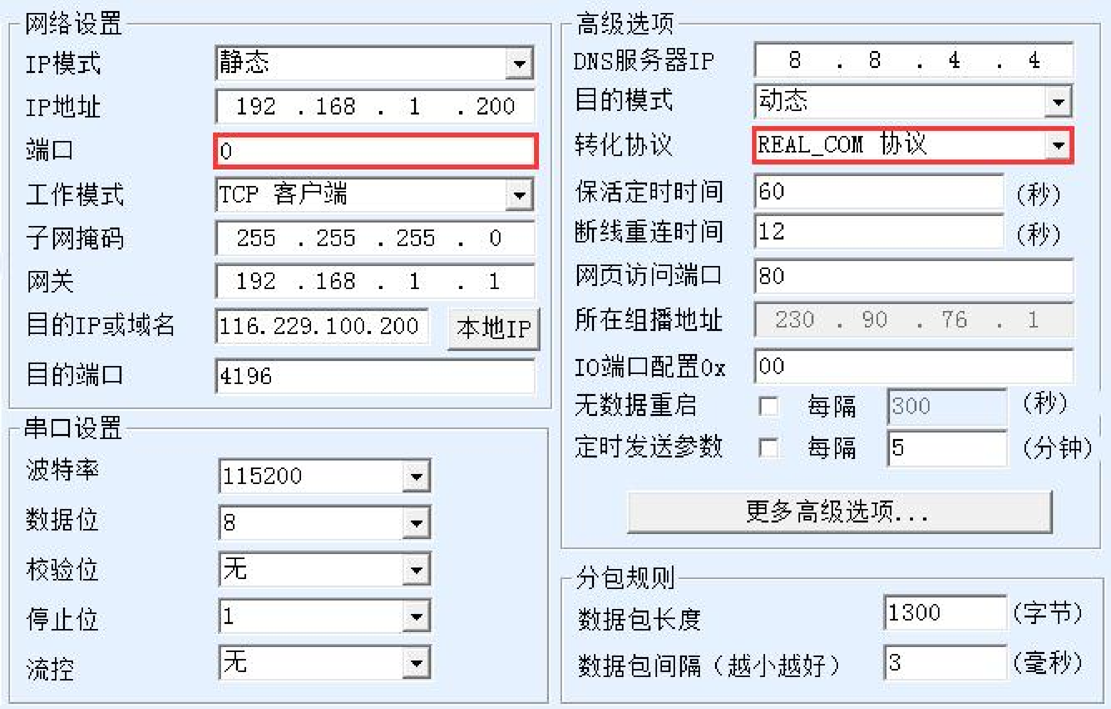
状态	虚拟串口	设备名称	设备来路IP
已连接	COM6	工厂2	192.168.1.200

Table 33 The virtual serial port is already working

7.3.4. Internet configuration with multiple serial ports

Multi-serial port products When the virtual serial port is used for Internet monitoring, additional precautions are required. The so-called multi-serial product refers to a device containing multiple serial ports, ZLAN multi-serial port models include: 2-serial ZLAN5200, 4-serial ZLAN5400, 8-serial ZLAN5800, 16-serial ZLAN5G00A and so on.

First, make sure zlvircom's version is greater than or equal to 4.50 (click the About button to see the version number).



网络设置
IP模式 静态
IP地址 192 . 168 . 1 . 200
端口 0
工作模式 TCP 客户端
子网掩码 255 . 255 . 255 . 0
网关 192 . 168 . 1 . 1
目的IP或域名 116.229.100.200
目的端口 4196

串口设置
波特率 115200
数据位 8
校验位 无
停止位 1
流控 无

高级选项
DNS服务器IP 8 . 8 . 4 . 4
目的模式 动态
转化协议 REAL_COM 协议
保活定时时间 60 (秒)
断线重连时间 12 (秒)
网页访问端口 80
所在组播地址 230 . 90 . 76 . 1
IO端口配置0x 00
无数据重启 ☐ 每隔 300 (秒)
定时发送参数 ☐ 每隔 5 (分钟)

分包规则
数据包长度 1300 (字节)
数据包间隔（越小越好） 3 (毫秒)

Table 34 Internet Multi-serial port device configuration

Thirdly, as shown in Figure 34, (1) enter the device parameter dialog box, change the conversion protocol to "REAL_COM" protocol, (2) change the port to 0

(ZLVirCOM version above 4.50, when the working mode is changed to TCP client, the port will be automatically recommended to change to 0).

Other configurations shown in Figure 34, such as "Destination IP or domain name" is the IP address of the server, "Destination port" is the server port, and "working mode" is TCP client, are all mentioned before and are not emphasized here.

zlvircom4.50 and above devices are used to configure multiple serial ports on the internet with stronger stability. Of course, if the single serial port products (such as ZLAN5103, ZLAN5102) use the above configuration is also possible.

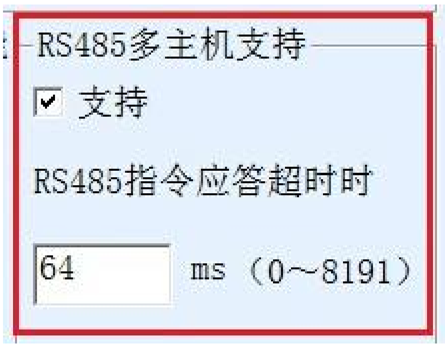
7.4. Multi masters function

ZLAN5142, ZLSN5142, ZLAN7142, ZLSN2042, ZLSN2043, ZLSN2043S and other models of Shanghai ZLAN support multi-host function. That's the product where the third number is 4.

The so-called multi-host function is that the host computer can use multiple computers to monitor the same serial port device at the same time, and there will be no data interference and conflict between different hosts.

The multi-host function is disabled by default. To enable the multi-host function, click More Advanced Options in the device configuration dialog box and select RS485 Multi-Host Support. The RS485 command response timeout time is the maximum response time of the command, which is generally 64 to 256ms.

Notice If Conversion Protocol is set to Modbus TCP to RTU, the multi-host function is automatically enabled.



RS485多主机支持

☑ 支持

RS485指令应答超时时

64 ms （0~8191）

Table 35 RS485 multi masters support

8. After-service

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