ZLAN5W12

Rack Mount

Thirty-two serial port servers

32 serial ports RS232/485/422 to

TCP/IP Converter

ZLDUI 20230610.1.0

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Version Information

The following changes have been made to this document:

Modification Record

date	version number	Document Number	Modifications
2023-6-10	Rev.1	ZLDUI 20230610.1.0	release version

Ownership Information

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1.Overview

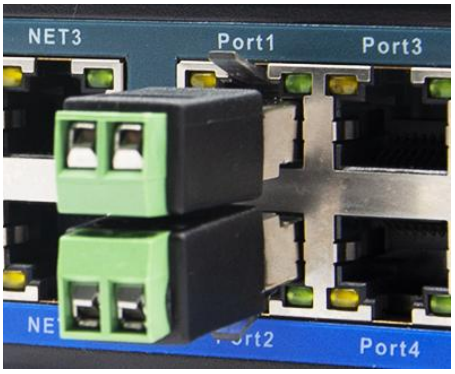
ZLAN5W12The serial port server is a standard developed by Shanghai Zhuolan Information Technology Co., Ltd.1URack Mount32 Serial PortRS232/485/422andTCP/IPProtocol converter between them.ZLAN5W12support32 indivualRS232Serial port/32 indivualRS485/RS422Serial port (RS422Need to order5W12-422Model), andRS232 Supports flow control. Connect toZLAN5W12,accomplish32The serial ports can work in full duplex mode at the same time.TCPserver,TCPClient,UDP,UDPMulticast.4A network port with switch function.

ZLAN5W12Every8Serial port (PORT) Use aIPAddress, differentPORTDifferentiate by port; also supports8Serial port usage8indivualIP, the same port, throughIPdistinguish.32Road Share4indivualIP.ZLAN5W12 haveModbus TCPchange Modbus RTU、Serial port conversionTelnetProtocol and other functions.

ZLAN5W12useARM9Processing chip capable of supporting921.6KbpsHigh-speed data transmission without packet loss.

picture1 ZLAN5W12 32Serial Server

5W12The serial port isRJ45Form. UseRS232When availableRJ45changeDB9(Male) adapter cable accessories. UseRS485You can use it whenRJ45change2pinTerminals. Please refer to the hardware section below for the wiring sequence.



picture2 RS232Adapter cable andRS485Transfer terminal

1.1.Hardware Features

1. 32All serial ports supportRS232,RS485,RS422Three serial ports (RS422Need to order5W12-422 model).

2. 32Each serial port can work in full-duplex independently without interfering with each other and can be configured with different baud rates.

3.support4It has the network switch function of 4 network ports and can be used as a switch at the same time.

4.Rich indicator lights, each serial port has an independentTCPConnection indicator and data activity indicator.

5. 220VACpowered by.

6. 19Inch standard1URack structure design, easy to install, with rack mounting accessories.

7.pass4classEMCTested over industrial temperature range.

1.2.Features

1.supportIP"Duplicate" technology: different serial ports can be used with ports orIPPort differentiation: Yes8indivual IPMerge into oneIP, different ports, suitable forIPLack of network;IPDistinguish: OneIPbecomes2~8indivualIP, the same port, suitable for applications with fixed port numbers (such asModbus TCPof502The port needs to be fixed).

2.supportTCPServer,TCPClient,UDPmodel,UDPMulticast.

3.Baud rate support300~921600bps, data bit support5~9The parity bit can be no parity, odd parity, even parity, mark, space, etc.CTS/RTSHardware flow control andXON/XOFFSoft fluid control.

4.supportMQTTGateway functionality.

5.supportJSONchangeModbus RTU,Modbus TCPand645Instrument protocol, supportHTTP POST,HTTP GET Format to upload data.

6.Support sending on device connectionMACAddress function, convenient for cloud management of devices.

7.Provide secondary development package for computer-side search and device configurationDLLDevelopment libraries.

8.supportDHCPDynamic acquisitionIP,DNSProtocol connection domain name server address.

9.Supports remote search of devices and configuration of device parameters in the cloud.

10.Support remote viewing of the device through softwareTCPConnection status. The virtual serial port supports data monitoring function.

11. 5W12supportModbusGateway function, supportModbus RTUchangeModbus TCP.

12. 5W12supportTelnetSerial port conversion function, support embeddedTelnetRelated agreements.

13. 5W12Support multi-host function: In a question-and-answer query mode, the network port allows multiple computers to access the same serial port device at the same time.

2.Technical Parameters

shape			
interface:	36indivualRJ45:in4Network ports,32serial port.		
power supply:	AC220VPower input, power:10W		
size:	19inch1UStandard sizeL x W x H =48cm×18cm×4.4cm		
Communication interface			
Ethernet:	4indivual10M/100M, switch structure, just connect any one		
Serial Port:	32serial ports, each of which contains:RS232/RS485/RS422（RS422Jumper required)		
Serial port parameters			
Baud rate:	300~921600bps	Verification:	None,Odd parity, Even parity,Mark, Space
Data bits:	5~9Bit	Flow Control:	RTS/CTS,DTR/DCR, NONE
software			
protocol:	TCP,UDP,HTTP,MODBUS TCP,MQTT,JSON,DHCP,DNS		
Configuration method:	ZLVirCOMTools, device management libraries,Web		
way of communication:	Socket, virtual serial port, device management function library		
Operating mode			
TCP server, TCP client, UDP, Real Com Driver, Modbus TCP, Telnet			

Environmental requirements		
Operating Temperature:	Industrial Grade	- 40~85℃
Storage temperature:	- 65~110℃	
Humidity range:	5~95%Relative humidity	

3.Hardware Description

3.1.Size and structure

ZLAN5W12Front view3As shown.

picture3 ZLAN5W12Front view

picture4 ZLAN5W12Indicator light diagram

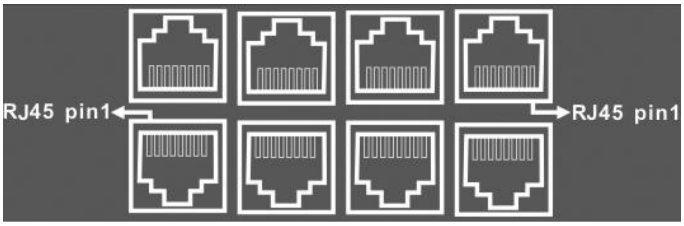
picture5 ZLAN5W12Rear view

Size19Inch standard1UChassisL x W x H =48cm×18cm×4.4cm.power supply:220VAC power supply, equipped with power cord and rack mounting ears. There is a grounding point on the outer shell (on the left side of the power supply). If the ground wire in the power supply line is already connected, there is no need to connect the ground wire.

name	**Function**
Power Indicator	Red. If it does not light up after power on, please check whether the switch is turned to "1"Location.
4Network portsNET1~NET4	It has the same function and can be used as a switch. The green and yellow lights on the network port indicate the network Network data activity.
PORT1~PORT32	The first row isPORT1, PORT3... ...PORT31, the second row isPORT2, PORT4...PORT32The green light of the network port indicates that the serial port corresponds toTCPconnect Establish or be inUDPmode, the yellow light indicates that there is data activity on the serial port.

User passesNET1~NET4Network port willZLAN5W12Connect to a switch, hub, or directly to a computer network card. Can also be used forZLAN5W12cascade, expanding to64Serial Server.

The network port line sequence is shown in the figure below:



picture6Network cable sequence

RJ45 PIN	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
name	RTS	RxD	TXD	CTS(422-)	GND	485+	485-	422+

When used asRS232The required pins are as follows:

RJ45 PIN foot	**name**	**illustrate**	**correspondingRJ45changeDB9Accessories Line order**
2	RxD	Serial port server receiving pin	2
3	TXD	Serial port server sending pin	3
5	GND	Digitally	5
1	RTS	When flow control is enabled, this pin is0The serial device server will accept the serial port Device data.	6,8

4	CTS	When flow control is enabled, this pin is0The serial port server sends data only when For serial device	4,7

Users can make their own crystal head to connect toRS232Equipment, or equipped with ZLANRJ45changeDB9Cable (male), the corresponding cable sequence refers to the table above.DB9Line can be directly connectedRS232 DB9If the device does not have flow control, thenRTSandCTSCan be left floating.

When used asRS485When you need to connectpin6（485A)andpin7（485B) is enough. It is recommended that users make their own crystal head.5Connect the shielded network cable toRS485equipment.

When used asRS422When the device is in use, it is necessary to set the jumper inside the device.pin4fromRS232Flow ControlCTSbecomesRS422 Reception R-Please consult ZLAN engineers for specific methods.

Serial number	**ZLAN5W12of422Wire**	With usersRS422Corresponding connection line
6	T/R+（485A）	R+
7	T/R-（485B）	R-
8	R+	T+
4	R-	T-

ZLAN5W12conform toRS485Standard, eachZLAN5W12Can bring32Terminal485Device. Maximum communication distance1200rice.485The terminal resistance is120Ohm, generally more than300Terminal resistors are only necessary when wiring 1 meter.485+and485-It must be a pair of twisted wires twisted together to reduce signal interference.

4.Instructions

4.1.Usage Overview

Connect the power cord provided to the device220VAfter connecting the power supply, turn on the switch on the back. If the power light on the front is on, it means the device is powered normally.4Any of the network ports can be connected to the network.ZLVircomConfigure the device parameters. The specific configuration method will be described later. After configuration, the software connects to the correspondingPORT OralTCP/UDP, data and the corresponding serial port can be forwarded to each other.

4.2.Software Installation

ZLVircomAvailable for devicesIPConfiguration of parameters such as , and creation of virtual serial port. If you do not need the virtual serial port function, you can download the installation-free version. Download address:http://www.zlmcu.com/download.htm

surface1 ZLVircomVersion

name of software	illustrate
ZLVircomDevice Management Tool (Non-installation version)	The non-installation version does not include the virtual serial port function.
ZLVircom-Device Management Tool (Installation Version)	Installation version, which containsZLVircom_x64.msiand ZLVircom_x86.msi.641-bit operating system installationx64, 321-bit operating system installationx86Version.

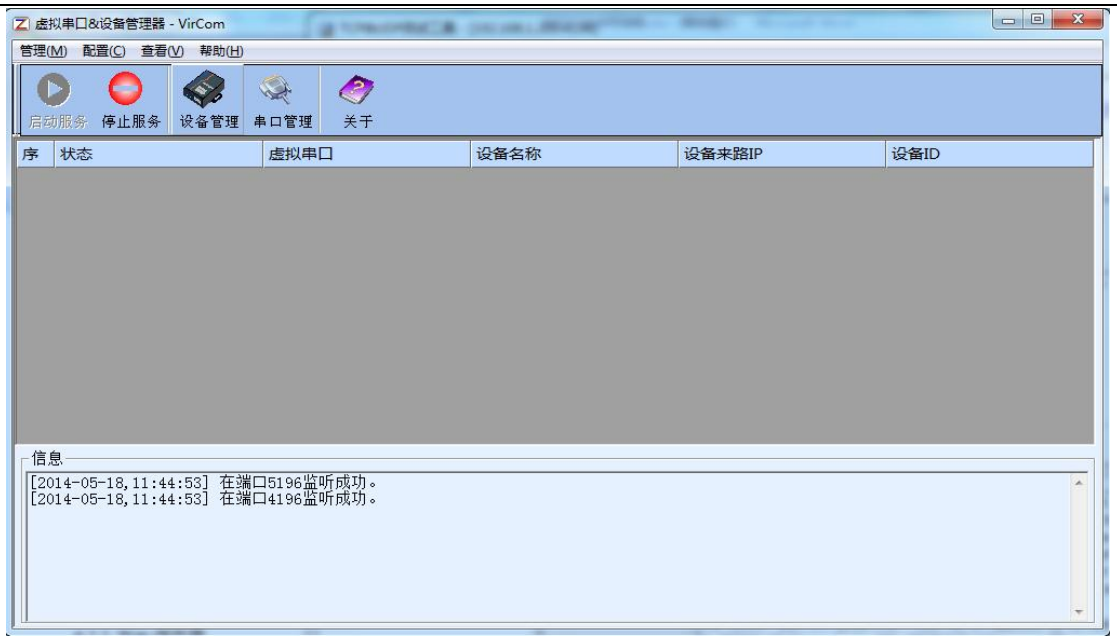
When installing, just follow the default prompts. After installation, it will start every time the computer startszlvir.com, used to create a virtual serial port when booting.

4.3.Parameter configuration

The following describes how to quickly edit multiple serial port devices in batches.ZLAN5W12ofZLVircomThe version needs to be greater than or equal to6.41. Please note the version:

picture7 ZLVircomVersion confirmation

ZLVircomAfter the installation is complete and the device hardware is connected, runZLvircomSoftware as shown8 As shown, then click "Device Management"9As shown. UseZLVircomIt is very convenient to search and configure device parameters in different network segments.ZLVircomAll computers can be connected to the same switch.



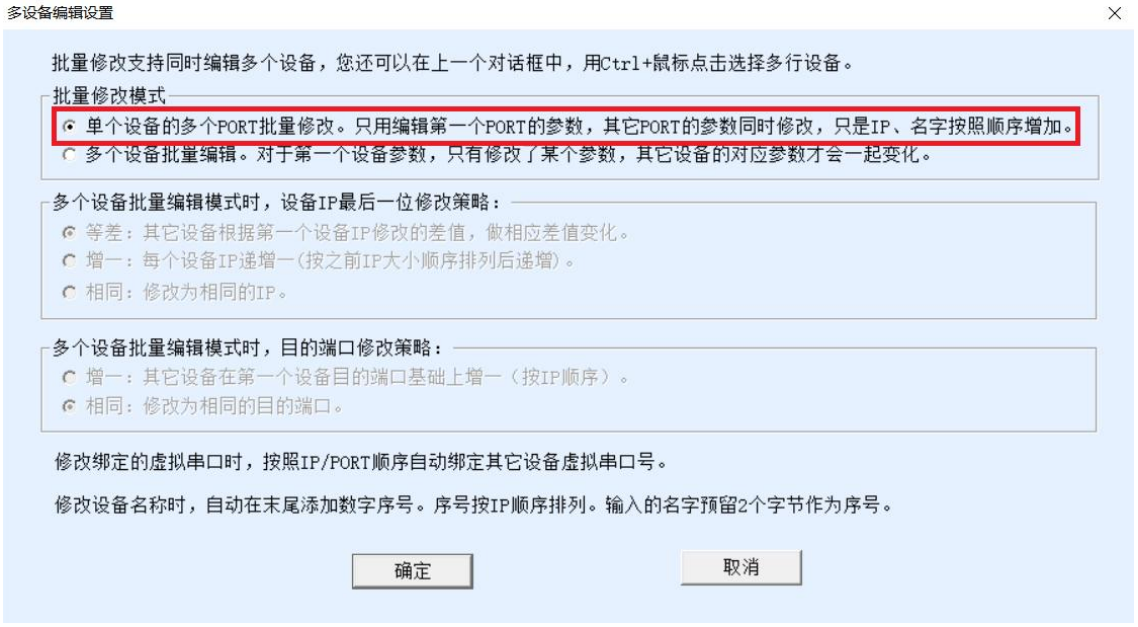
picture8 ZLVircomMain interface

You can see that at least32indivualPORTThe device list of the same device. 32 indivualPORTSo you need to sort by name to make differentPORTIn a continuous area. To sort, click the title bar "Device Name".PORTAlready named E3F78B-01~E3F78B-32,on the leftE3F78BThis is the deviceID, which is the firstPORTofIDAfter6Bit.-01~-32Indicates whichPORTSince the device name can also be modified, if the name has been modified, you can use the "PORT”List, see the devicePORTNo.1~32.

序	类型	设备名称	型号	P..	设备IP	本地...	目的IP	模式	TCP...	虚拟串口...	虚拟串口...	设备ID	TXD	RXI
1	内网	E3F78B-01	2012	1	192.168.1.221	5001	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE3F78B	0	0
2	内网	E3F78B-02	2012	2	192.168.1.221	5002	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE3F78C	0	0
3	内网	E3F78B-03	2012	3	192.168.1.221	5003	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE3F78D	0	0
4	内网	E3F78B-04	2012	4	192.168.1.221	5004	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE3F78E	0	0
5	内网	E3F78B-05	2012	5	192.168.1.221	5005	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE3F78F	0	0
6	内网	E3F78B-06	2012	6	192.168.1.221	5006	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE3F790	0	0
7	内网	E3F78B-07	2012	7	192.168.1.221	5007	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE3F791	0	0
8	内网	E3F78B-08	2012	8	192.168.1.221	5008	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE3F792	0	0
9	内网	E3F78B-09	2012	9	192.168.1.222	5001	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE7F7BF	0	0
10	内网	E3F78B-10	2012	10	192.168.1.222	5002	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE7F7C0	0	0
11	内网	E3F78B-11	2012	11	192.168.1.222	5003	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE7F7C1	0	0
12	内网	E3F78B-12	2012	12	192.168.1.222	5004	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE7F7C2	0	0
13	内网	E3F78B-13	2012	13	192.168.1.222	5005	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE7F7C3	0	0
14	内网	E3F78B-14	2012	14	192.168.1.222	5006	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE7F7C4	0	0
15	内网	E3F78B-15	2012	15	192.168.1.222	5007	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE7F7C5	0	0
16	内网	E3F78B-16	2012	16	192.168.1.222	5008	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE7F7C6	0	0
17	内网	E3F78B-17	2012	17	192.168.1.223	5001	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE8F0D8	0	0
18	内网	E3F78B-18	2012	18	192.168.1.223	5002	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE8F0D9	0	0
19	内网	E3F78B-19	2012	19	192.168.1.223	5003	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE8F0DA	0	0
20	内网	E3F78B-20	2012	20	192.168.1.223	5004	192.168.1.173	TCP Server	未建立	未设置	未联通	9BE8F0DB	0	0

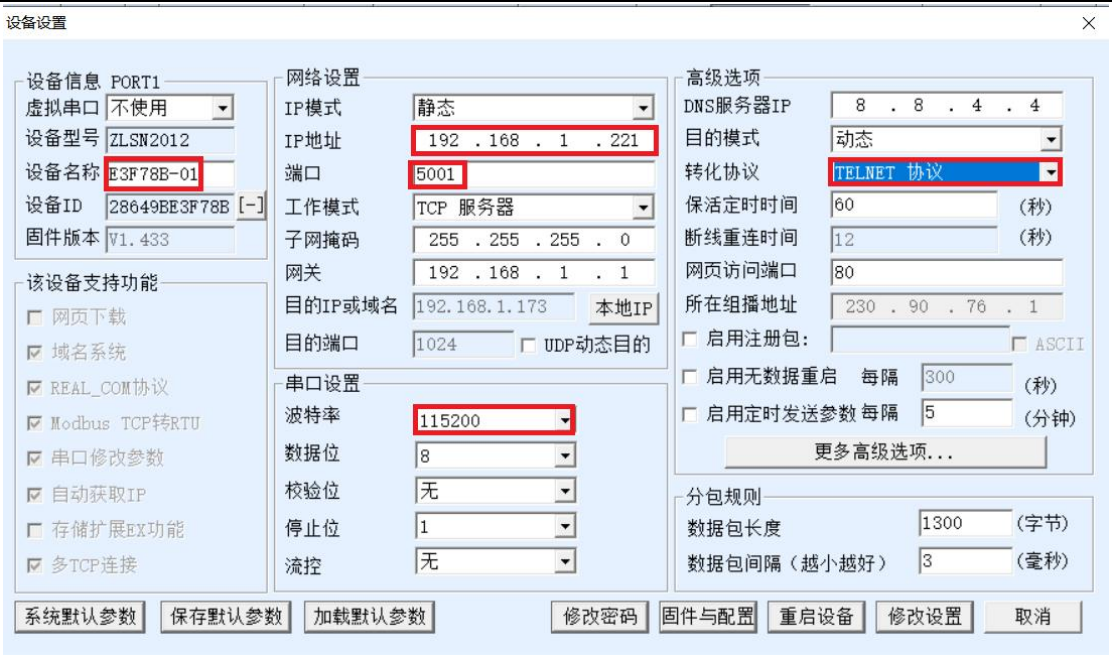
picture9Device List

After sorting, the device32indivualPORTAlready arranged in series, now from the first device E3F78B-01Start selecting by dragging the mouse down until all32indivualPORTThen click Batch Edit. Batch Edit will32indivualPORTModified once and with the correctIPand ports.



picture10Batch Settings Options

Because of the choice1~32All the roadPORT, so the software recognizes allPORTOne-time modification, as shown above. Select a single module8indivualPORTWhen batch modifying methods, you do not need to modify the contents of the parameter dialog box. You can also modify it by clicking "Modify Settings".PORT1The device parameters have not been modified, but other2~8roadPORTwill be modified toPORT1device parameters.



picture11Parameters Dialog Box

In the parameter dialog box, the user can choose to modify parameters such as baud rate.telnetPlease select the serial port TELNETAgreement.E3F78B-01Is the software based onPORTofIDAutomatically filled in, no need for user to fill in. IPaddress192.168.1.221Is the firstIPAddress, Port5001Is the firstPORTThen click the "Modify Settings" button.32indivualPORT.

because32Inside the road4A separate module,1~8Road belongs to module1,9~16Road belongs to module2,17~24 Road belongs to module3,25~32Road belongs to module4.after editedIPandPORTAs shown in the following table:

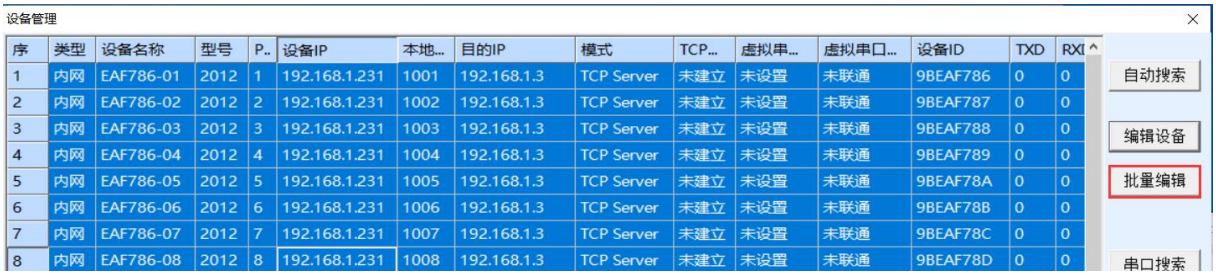
PORTNumber	IP	port	Internal modules	name
1~8	192.168.1.221	5001~5008	Modules1	E3F78B-01~ E3F78B-08
9~16	192.168.1.222(superior oneIPadd1)	5001~5008	Modules2	E3F78B-09~ E3F78B-16
17~24	192.168.1.223	5001~5008	Modules3	E3F78B-17~ E3F78B-24
25~32	192.168.1.224	5001~5008	Modules4	E3F78B-25~ E3F78B-32

If the software requires a connectionPORT 20, then first knowIPyes192.168.1.223（8indivualPORToneIP,20 Belong to module3), and then the port number is ranked first in this module4indivual(20 MOD 8 = 4), so the port is5004.

So connectIPfor192.168.1.223, port is5004.

Modules1~Modules4Cannot be set to the sameIPOtherwise, communication will fail. If you mistakenly set the sameIP, need to be revised to a differentIPNo adverse results will be produced.PORTCan also be set to differentIP, but if the port is not fixed, it must be modifiedIPIt is not recommended to use multipleIPHere is how to change it to aPORT, multipleIP.

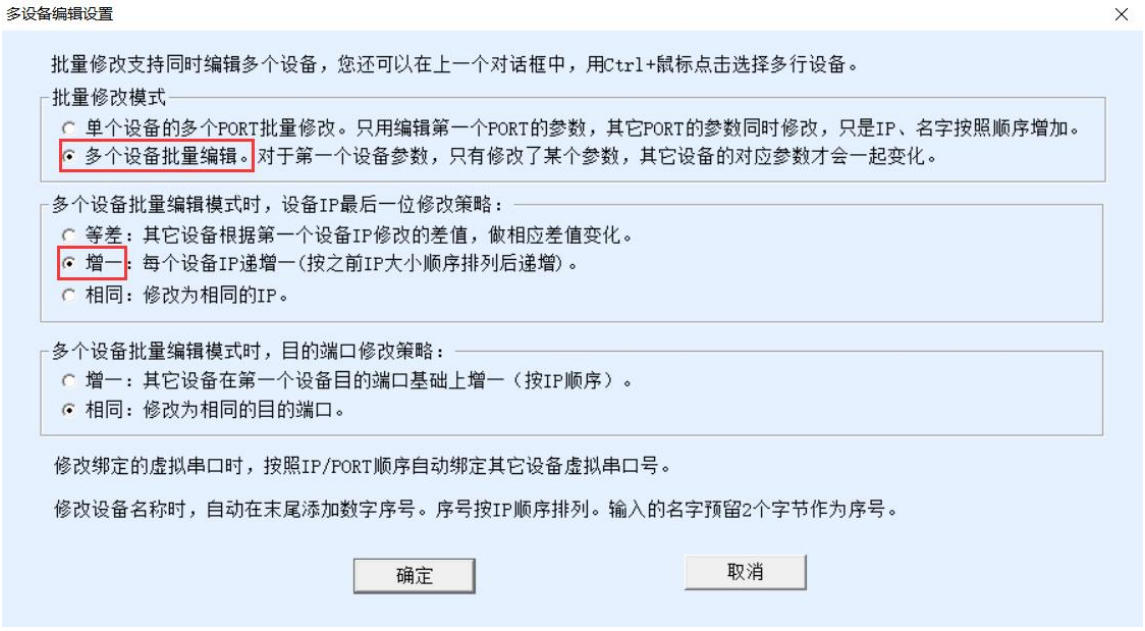
First select thePORTnumber, then click Bulk Edit



序	类型	设备名称	型号	P..	设备IP	本地...	目的IP	模式	TCP...	虚拟串...	虚拟串口...	设备ID	TXD	RXI
1	内网	EAF786-01	2012	1	192.168.1.231	1001	192.168.1.3	TCP Server	未建立	未设置	未联通	9BEAF786	0	0
2	内网	EAF786-02	2012	2	192.168.1.231	1002	192.168.1.3	TCP Server	未建立	未设置	未联通	9BEAF787	0	0
3	内网	EAF786-03	2012	3	192.168.1.231	1003	192.168.1.3	TCP Server	未建立	未设置	未联通	9BEAF788	0	0
4	内网	EAF786-04	2012	4	192.168.1.231	1004	192.168.1.3	TCP Server	未建立	未设置	未联通	9BEAF789	0	0
5	内网	EAF786-05	2012	5	192.168.1.231	1005	192.168.1.3	TCP Server	未建立	未设置	未联通	9BEAF78A	0	0
6	内网	EAF786-06	2012	6	192.168.1.231	1006	192.168.1.3	TCP Server	未建立	未设置	未联通	9BEAF78B	0	0
7	内网	EAF786-07	2012	7	192.168.1.231	1007	192.168.1.3	TCP Server	未建立	未设置	未联通	9BEAF78C	0	0
8	内网	EAF786-08	2012	8	192.168.1.231	1008	192.168.1.3	TCP Server	未建立	未设置	未联通	9BEAF78D	0	0

picture12manyIPModification step 1

In the batch modification configuration, cancel the "Multiple devices per device"PORT”mode, change it to "Multiple Devices Batch Editing", this mode will not be intelligently recognizedIPand ports.



picture13manyIPModify step 2

existIPSelect "Increase by one" in the method, that is, according to the firstIP,BackIPAutomatic increase1.

picture14manyIPModify step three

In the Modify Parameters dialog box, be sure to modifyIPIf the address is not modified, no operation will be performed. This is because this mode will only modify the changed parameters, and the unchanged parameters will not be affected.

序	类型	设备名称	型号	P..	设备IP	本地...	目的IP	模式	TCP...	虚拟串...	虚拟串口...	设备ID	TXD	RXD
1	内网	ECF78C-01	2012	1	192.168.1.221	5001	192.168.1.111	TCP Server	未建立	未设置	未联通	9BECF78C	0	0
2	内网	ECF78C-02	2012	2	192.168.1.222	5002	192.168.1.111	TCP Client	未建立	未设置	未联通	9BECF78D	0	0
3	内网	ECF78C-03	2012	3	192.168.1.223	5003	192.168.1.111	TCP Client	未建立	未设置	未联通	9BECF78E	0	0
4	内网	ECF78C-04	2012	4	192.168.1.224	5004	192.168.1.111	TCP Client	未建立	未设置	未联通	9BECF78F	0	0
5	内网	ECF78C-05	2012	5	192.168.1.225	5005	192.168.1.111	TCP Client	未建立	未设置	未联通	9BECF790	0	0
6	内网	ECF78C-06	2012	6	192.168.1.226	5006	192.168.1.111	TCP Client	未建立	未设置	未联通	9BECF791	0	0
7	内网	ECF78C-07	2012	7	192.168.1.227	5007	192.168.1.111	TCP Client	未建立	未设置	未联通	9BECF792	0	0
8	内网	ECF78C-08	2012	8	192.168.1.228	5008	192.168.1.111	TCP Client	未建立	未设置	未联通	9BECF793	0	0

picture15manyIPModification results

From the modification results, nowIPbecomes8, from192.168.1.221arrive192.168.1.228.

4.4.Detailed parameter meaning

because32The functions and parameters of each serial port are independent and similar. The following parameters only introduce the parameters of one of the serial ports. The detailed meanings are as follows:

surface2Parameter meaning

parameter name	Ranges	meaning
Virtual Serial Port	Virtual string not used or created	You can bind the current device to a created virtual serial port.

	mouth	Please add it in the "Serial Port Management" on the main interface firstCOMmouth.
Device Model		Only display the core module model
Device Name	Any	You can give the device a human-readable name, up to9Words Section, support Chinese names.
equipmentID		Factory onlyID,Unchangeable.
Firmware version		Core module firmware version
The device supports Function		Reference Table3Device supported features
IPmodel	Static,DHCP	The user can select static orDHCP(Dynamic acquisitionIP)
IPaddress		Serial port serverIPaddress
port	0~65535	The serial port server is inTCP ServerorUDPMode monitoring Listen port. When acting as a client, it is best to specify the port as0port, It is helpful to improve the connection speed when using0The system will follow the port The machine is assigned a local port. The difference between this and the non-zero port yes:(1) The local port is0When the module is restarted andPCmachine Re-create a newTCPConnection, oldTCPConnection available The device may not be closed and multiple fake connections may exist. Generally, the host computer hopes to close the old connection when the module restarts; specify A non-zero port will close old connections.2) The local port is0hour, TCPRe-establishing the connection takes less time. The serial port server is inTCPIn client mode, it also acts as TCPThe server listens for incoming connections on the port. At this point,TCP The local port number that the client uses to connect to the server is the "port Mouth +1000".
Operating mode	TCPServer mode,TCP Client mode,UDPmodel, UDPMulticast	Set asTCPWhen the server is on, the serial port server waits for the computer Connect; Set toTCPWhen the client is Towards the goalIPThe specified network server initiates the connection.
Subnet Mask	For example:255.255.255.0	Must be the same as the subnet mask of the local area network.
Gateway	for example:192.168.1.1	Must be the same as the local LAN gateway.
PurposeIPor domain name		existTCPClient orUDPIn this mode, data will be sent to the destination

		IPOr the computer indicated by the domain name.
Destination Port		existTCPClient orUDPIn this mode, data will be sent to the destination IPThe destination port of the
Baud rate	300,600,1200,2400, 4800,7200,9600, 14400,19200,28800, 38400,57600,76800, 115200,230400, 460800,921.6K	Serial port baud rate
Data bits	5,6,7,8,9	
Check Digit	None, Even, Odd, Mark, Empty grid	
Stop bits	1,2	
Flow Control	No flow control, hard flow control CTS/RTS、 Hard flow control DTR/DCR、 Soft Fluidics XON/XOFF	Only forRS232Serial port valid
DNSserver		When the purposeIPWhen describing by domain name, you need to fill in thisDNSClothes ServerIP.existIPMode isDHCPNo need to specifyDNS server, it will automaticallyDHCPServer acquisition.
Purpose Mode	Static, dynamic	TCPIn client mode: After using static destination mode, the device Connect to server continuously5The device will automatically restart after the first failure.
Conversion Protocol	NONE , Modbus TCP<->RTU , Real_COM,TELNET	NONEIndicates that data forwarding from the serial port to the network is transparent; Modbus TCP<->RTUwillModbus TCPAgreement Direct Convert toRTUAgreement, convenience andModbus TCPprotocol Cooperate;RealCOMFor compatibility with old versionsREAL_COM protocol is designed for virtual serial port mode, but When using a virtual serial port, you do not necessarily need to selectRealCom protocol.TELNETProtocol support networkTELNETThe square Log in to our device to communicate with the serial port
Keep-alive time	0~255	Heartbeat interval.1) Select1~255If the device is

		AtTCPIn client working mode, it will automatically Scheduled time"TCPThis ensures the link TCPValidity. Set to0WhenTCPHeartbeat. (2) Set as0~254When the conversion protocol is selected as REAL_COMProtocol, every keep-alive timer, the device A length of1Contents0data, to achieve RealcomThe heartbeat mechanism in the protocol. Set to255There will be no realcomHeartbeat. (3)Set as0~254When the device Work onTCPClient, the device will keep alive every time Will send device parameters to the destination computer. Set to255Time will No parameter sending function, remote device management can be achieved.
Disconnection reconnection time	0~255	InTCPIn client mode, if the connection is not successful, Re-initiate the call to the computer after a "disconnection reconnection time"TCPeven can be0~254seconds, if set255, then it means Never reconnect. Note the firstTCPConnection (such as Hardware power on, throughzlvir.comSoftware restarts the device, no data The light is on) will usually be connected immediately, only after the first connection fails It will wait for the "disconnection reconnection time" before trying again, so The "reconnection time" will not affect the normal operation of the network and server. The connection establishment time.
Web access port	1~65535	The default is80
Multicast address		UDPUsed for multicast
Enable Registration Package		whenTCPWhen the connection is established, the registration packet is sent to the computer. After enabling the registration package, you must selectrealcomProtocol. Support TCPServers andTCPClient mode.
Packet length	1~1400	One of the serial port framing rules. The serial port server receives the long After receiving the data, the received data is sent to the network as a frame superior.
Packet Interval	0~255	Serial port framing rule 2. When the serial port of the serial server receives data If a pause occurs and the pause time is greater than this time, the received The received data is sent to the network as a frame.

The functions supported by the device are explained as follows:

surface3Device supported features

name	illustrate
Domain Name System	PurposeIPIt can be a domain name (for example,wwwserver address) .
REAL_COMprotocol	A non-transparent serial port server protocol suitable for multi-serial port serversInternet Bind the virtual serial port. Because the protocol contains the deviceMACSo the address is Helps the host computer to identify the device. Generally, it can be ignored.
Modbus TCPchangeRTU	can be realisedModbus TCPchangeRTU. It also supports multi-host functionality.
Modify the parameters of the serial port	Support serial portATInstructions to configure and read device parameters.
Automatic acquisitionIP	supportDHCPClient Protocol
manyTCPconnect	AsTCPThe server supports more than1indivualTCPconnect.
UDPMulticast	UDPMulticast
Multi-PurposeIP	AsTCPSupport simultaneous connections when client is connected7PurposeIP.
P2PFunction	Support byP2PThe traversal technology enables access to devices in any network. Suffix:NThe models support this function.
TELNETFunction	Support byTelnetThe protocol is used to connect to the ZLAN serial server and monitor the serial port of the device.

4.5.Modify parameters without restarting

becausePORT1~PORT8Belong to the same module, generally modify one of themPORTThe parameters will restart the entire module. However, the following changes will only restart the localPORT, and the otherPORTWill not be affected.

1.Just click the "Reboot Device" button without modifying any parameters.

2.The conversion protocol is between "none" and "TELNETProtocols".

3.Just modify one or more of the following parameters:

a)Local port, destination port

b)Baud rate, data bit, check bit, flow control, stop bit

c)Device name, packet interval, packet length

TCPCommunication test

because32The functions and parameters of each serial port are independent and similar. The subsequent communication introduction only introduces

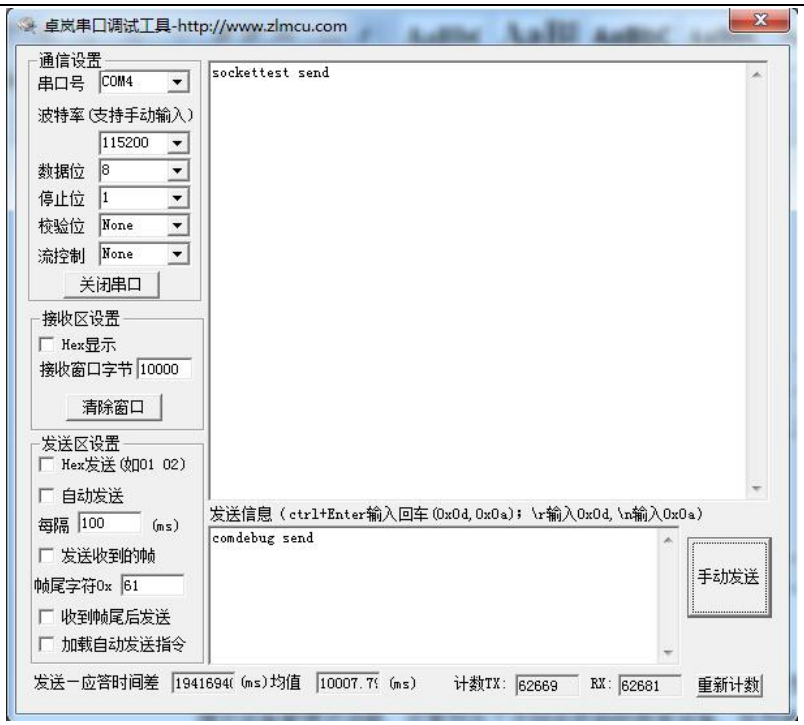
This section describes the configuration of one of the serial ports.

After configuring the device parameters, you can use the serial port tool,TCPDebugging toolsTCPConnect communication test.

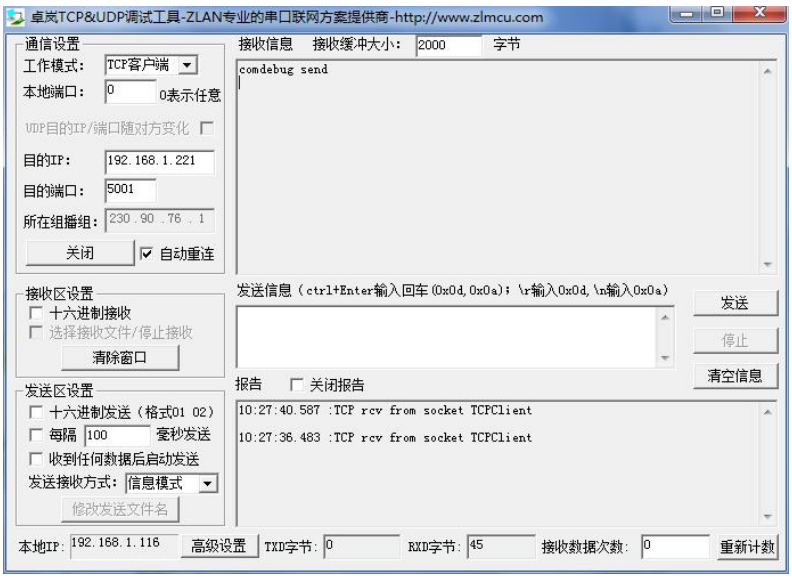
picture16 TCPCommunication diagram

Assume nowPCMachineCOMmouth(USBchangeRS232cable) and the serial port of the serial server, then openZLComDebug（http://www.zlmcu.com/download/Comdebug.rar)Serial port debugging assistant, and open the correspondingCOMMouth map17; OpenTCP & UDPDebug AssistantSocketTest （http://www.zlmcu.com/download/SocketTest.rar), and asTCPClient mode, fill in the purpose IPFor serial port serversIP(Currently192.168.1.221), the destination port is5001, then click the "Open" button18.existSocketTestEnter "socket send"Click Send, and the data will be transferred to the serial server through the network port.RS232interface, and then sent toZLComDebug, then in ZLComDebugIn turn,ZLComDebugEnter "Comdebug send", click Send to send tosocket test, and display it.

This demonstration demonstrates the serial port to network port and network port to serial port data transparent forwarding function of the serial device server.



picture17 comdebugSend and receive interface

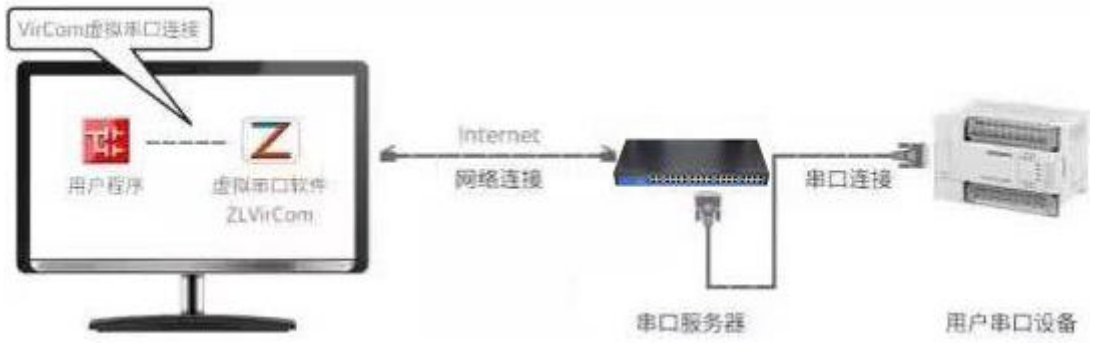


picture18 sockettestSend and receive interface

4.7.Virtual serial port test

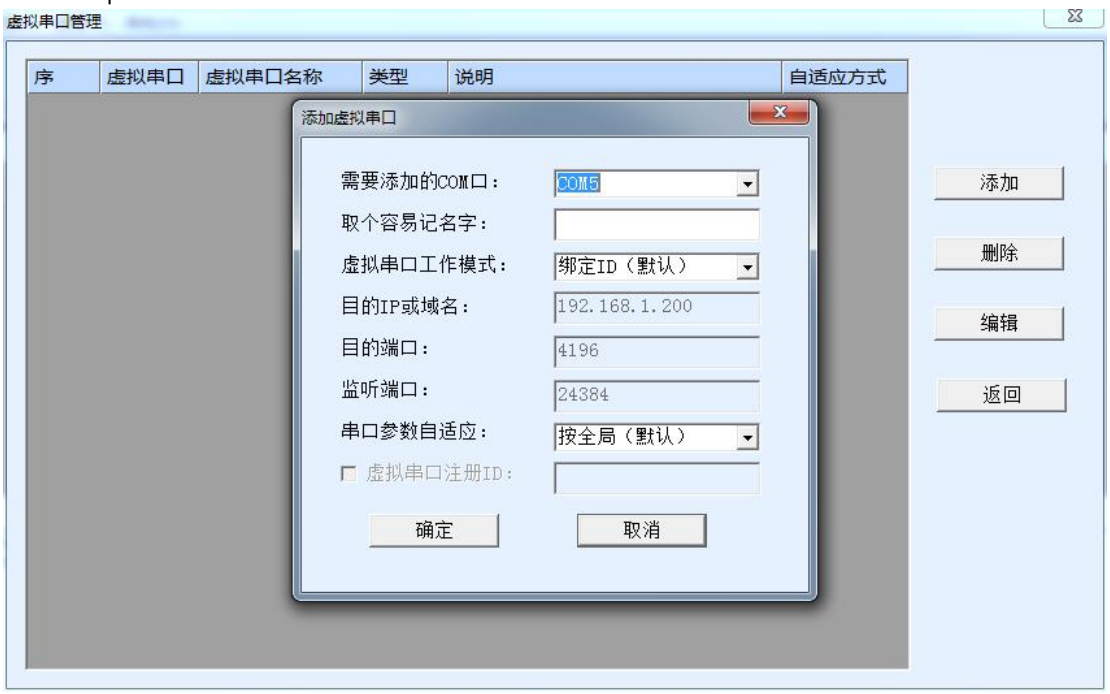
picture16middleSocketTestis throughTCPTo enable the user's developed serial port software to communicate with the serial port server, it is necessary to add a

Virtual serial port.19As shown,ZLVircomand user programs run on one computer,ZLVircomVirtual OneCOMMouth, let thisCOM The port corresponds to this serial port server. When the user program opensCOMCommunication can be done through ZLVircom-Serial port server - send to the user's serial port device. The following demonstrates the operation steps:



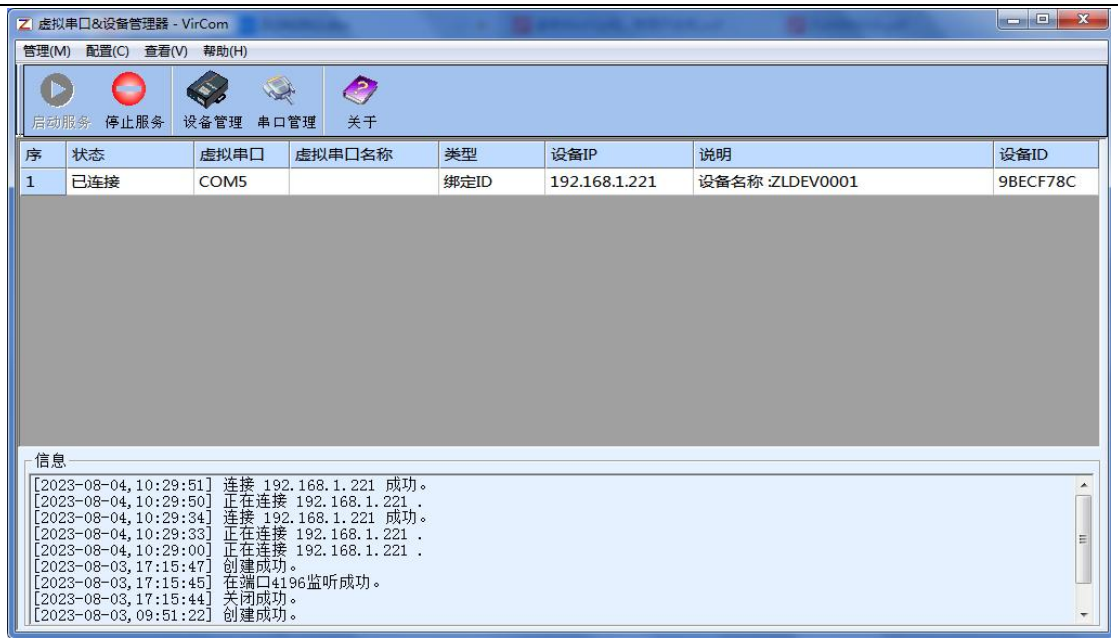
picture19The role of virtual serial port

ClickZLVircomClick "Serial Port Management" on the main interface, then click "Add" and select AddCOM5,in COM5The computer didn't exist.COMmouth.



picture20Add a virtual serial port

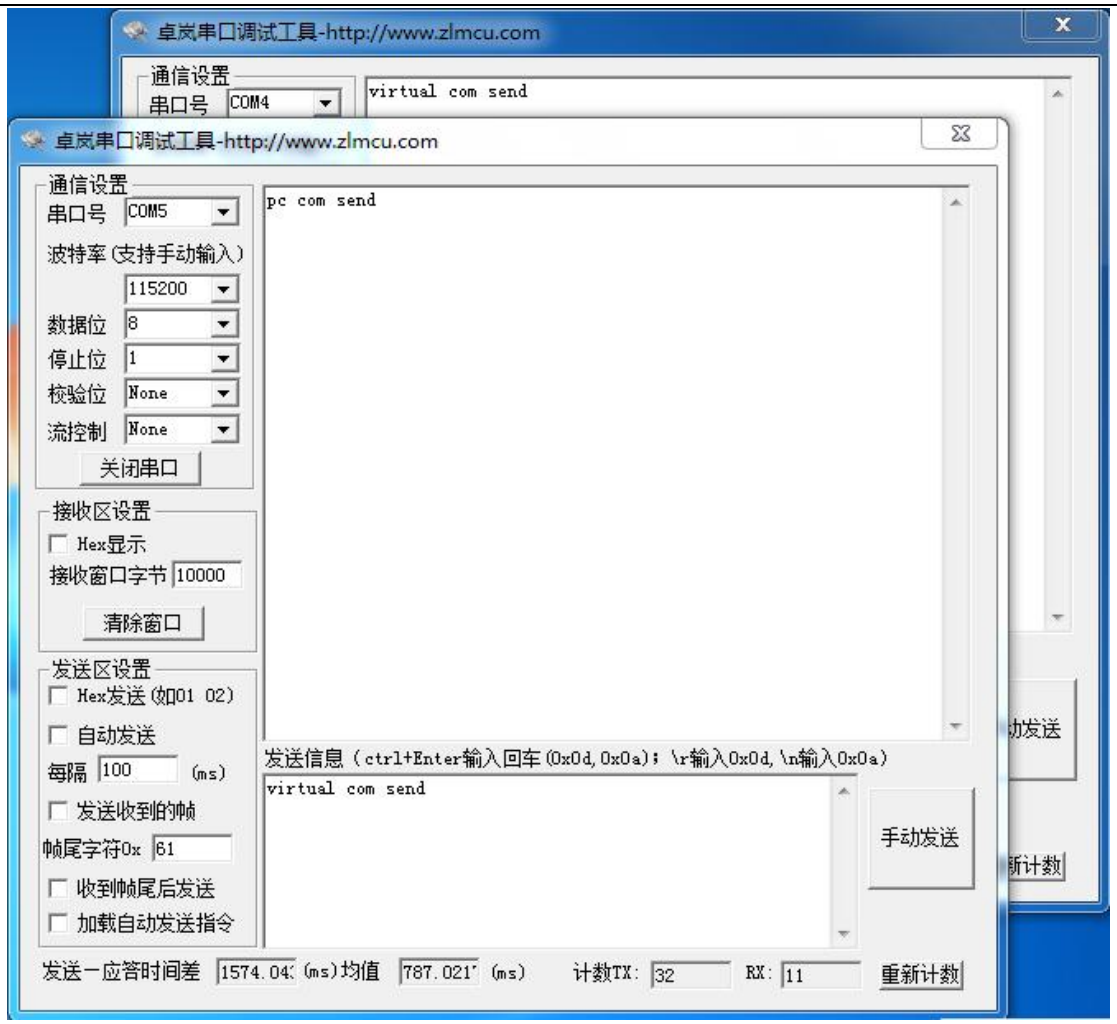
Then go to Device Manager and double-click the requiredCOM5Select the bound device from the "Virtual Serial Port" list in the upper left corner.COM5. Then click "Edit Settings". and returnZLVircomYou can see the main interface ofCOM5 Already andIPfor192.168.1.211The device is connected. You can now useCOM5replaceSocketTestto communicate.



picturetwenty oneThe virtual serial port has been connected

OpenZLComdebugTo simulate the user's serial port program, openCOM5(The virtual serial port above), open another ZLComdebugTo simulate a serial port device, openCOM4(Hardware serial port).COM5The link for sending data is as follows:COM5-ZLVircom-Serial server network port-Serial server serial port-COM4.on the contrary, COM4arriveCOM5It can also transfer data:COM4-Serial port server serial port-Serial port server network port- ZLVircom-COM5As shown in the figuretwenty twoIt shows the data sending and receiving of both parties.

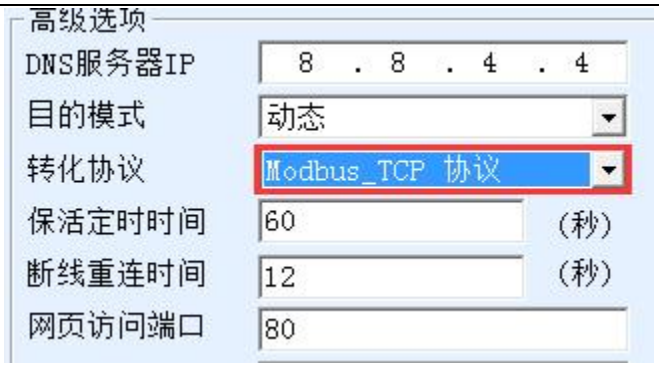
IfCOM4If it is changed to user serial port device,COM5It can realize communication with user equipment.



picturetwenty twoCommunicate via virtual serial port

Modbus TCPtest

By default, serial port and network port data are transmitted transparently.Modbus TCPchangeRTU, you need to select the conversion protocol as "Modbus TCP--RTU, as shown in the figuretwenty threeAs shown. At this time, the device port automatically changes to502, at this time the user'sModbus TCPThe tool is connected to the serial serverIP of502Port, sending Modbus TCPThe command will be converted toRTUThe command is output from the serial port. For example, the serial server receives00 00 00 00 00 06 01 03 00 00 00 0aofModbus TCPcommand, the serial port outputs01 03 00 00 00 0a c5 cdNote: The serial port may send multiple01 03 00 00 00 0a c5 cdinstruction, this is because the defaultModbusIf the storage mode is used, query commands will be automatically polled. How to switch to the non-storage mode will be explained later.



picturetwenty threeEnableModbus TCPFunction

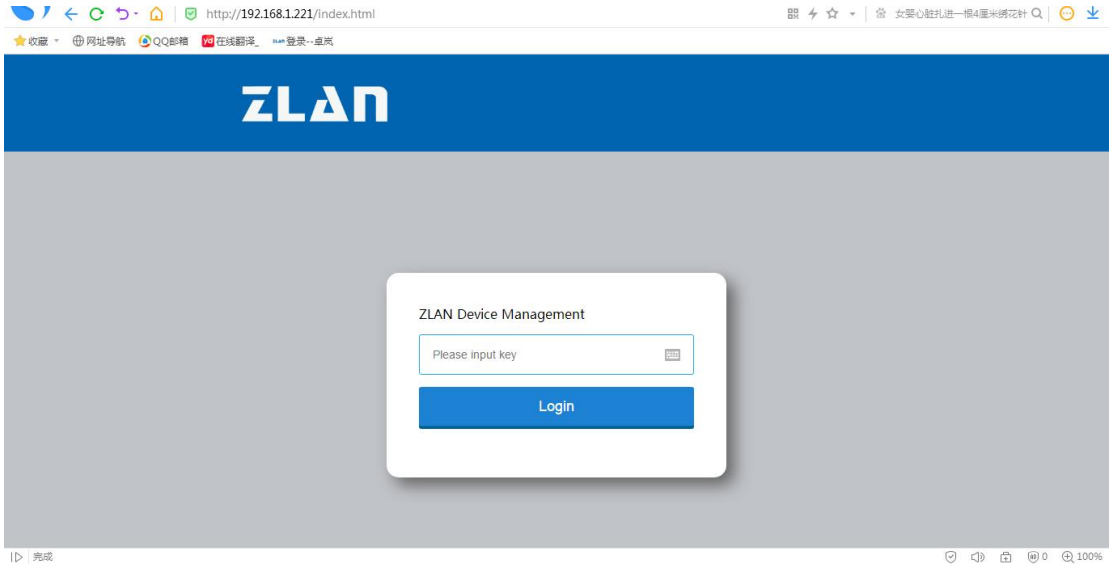
If the userModbus TCPThe software is used as a slave (Slave), you need to change the working mode to client based on the conversion protocol selection.IPChange toModbus TCPComputer where the software is locatedIP, the destination port is 502, as shown in the figuretwenty fourshown.

picture24 Modbus TCPBe a client.

4.9. WebMode Configuration

useZLVircomYou can search and configure device parameters in different network segments.WebThe configuration mode requires that the computer and the serial port server are in the sameIPsegment, and the serial port server needs to be known in advanceIP address. ButWebConfiguration can be done on any machine withoutZLVircomon a computer.

1.because5W12Every8Serial ports required1indivualIPEnter the serial server's address in the browser.PORT1OralIPThe address can modify the parameters of the first eight serial ports, for examplehttp://192.168.1.221, open the following web page.



picture25 weblog in page

2.existPasswordEnter a password: There is no password by default. ClickloginButton to log in.

picture26 WebConfiguration interface

3.On the page that appears, select the page you want to modify.PORT1-8. Modify the correspondingPORTAfter entering the parameters, click Submit. For related parameters, refer to the table2Parameter meaning.

4.Note: 1. Web pageIPThe address is the first serial port (PORT1)ofIP,PORTmouth2-8ofIPUnable to access the webpage, modifyPORT9-16When the web pageIPyesPORT9ofIP, and so on. 2. Submitting changes will only submit the current PORTFor example,PORT2After modifying the parameters on the interface, clicking Submit will only

RevisePORT2Parameters.

5.Working mode and conversion protocol

Different serial port server working modes and conversion protocols can be selected in different application scenarios, so that they can be used more stably and reliably. The following is a detailed introduction.

There are basically two types of serial port servers: with virtual serial port and without virtual serial port, as shown in the figure.16 TCPCommunication diagrams and graphs19The function of the virtual serial port is shown in the figure. The user software that needs to be connected with the virtual serial port is the serial port interface (COMport), that is, both the user software and the user device are serial ports; in the case of non-virtual serial ports, the user software is directly TCP/IPCommunication but the user device is still serial port.

In non-virtual serial port mode, the "conversion protocol part" is divided into transparent transmission,Modbus TCPchange RTU, RealcomProtocol andTELNET 4If the user software is a fixed protocolModbus TCPProtocol and the lower machine isModbus RTUWhen you need to selectModbus TCPchangeRTUWay;RealcomThe protocol is currently only used in multi-serial port servers as TCPWhen the client connects to a server and the server uses a virtual serial port, TELNETThe agreement applies toTelnetWhen the ZLAN module is connected via the protocol, the serial port of the monitoring device is

The usage is summarized as follows:

surface4Network Configuration Mode

serial number	Virtual serial port use	Device working mode	Conversion Protocol	illustrate
1	use	TCPserver	none	Suitable for user software to openCOMOral active The occasion for collecting data.
2	use	TCPClient	none	Suitable for occasions where the device actively sends data. If you selectTCPThe server may The device cannot reconnect after being disconnected.
3	Do not use	TCPserver	Modbus TCPchangeRTU	Applicable to user software isModbus TCP, The user device isModbus RTU. and Modbus TCPThe situation of being the main station.
4	Do not use	TCPClient	Modbus TCPchangeRTU	Applicable to user software isModbus TCP, The user device isModbus RTU. and Modbus**RTU**The situation of being the main station.
5	use	TCPClient	Realcomprotocol	Multi-port serial server asTCPClient,

				When using a virtual serial port, it is best to use Realcomprotocol.
6	Do not use	TCPserver	Telnetprotocol	Applicable toTelnetProtocol connection When using ZLAN serial port server, the monitoring device Backup serial port.
7	Do not use	TCPClient	none	Suitable for a large number of devices connected to one cloud In general, the cloud is InternetA public networkIPServices device.
8	Do not use	TCPserver	none	Applicable to both devices and computers in one Local network, local monitoring, no need CrossInternetcommunication.

5.1.Virtual serial port mode

If the user software is usingCOMIf you want to communicate with the port, you must use the virtual serial port mode.PLCSoftware, configuration software, instrument software, etc.

Check whether the monitoring computer and device are in the local network:

a)If the computer is inInternetA public networkIPIf the device is using a server, then it must use TCPClient mode allows the device to connect to the server.4middle2and5If it is a multi-port server, you must select5.

b)All in the local network (canpingIf the device sends data actively, you must use the device to doTCPClient2Otherwise, you can choose1Way.

5.2.directTCP/IPCommunication Mode

If not neededModbus TCPProtocol conversion does not require a virtual serial port. In this case, the user software may communicate directly with the network port of the serial server.TCP/IPCommunication, the serial port server willTCP/IPThe data is converted into serial port data and sent to the serial port device.

Generally, users of this type of usage develop their own host computer network communication software, integrating the serial port communication protocol solution of the device.

This method is more flexible and efficient than the virtual serial port.4middle7and8.

exist"3.4.6 TCPThe section "Communication Test" briefly describes the serial port server as aTCPHere we will describe how to communicate with the server.TCPClient,UDPMode, multipleTCPHow to connect and communicate with computer software.SocketTest(Imitate userTCP/IPcommunication software) as an example.

ZLAN serial port to network port module complies with the standardTCP/IPProtocol, so any network terminal that complies with the protocol can communicate with the serial port server. ZLAN Technology provides a network debugging tool (SocketDlgTestProgram) to simulate a network terminal to communicate with the serial port server.

In order for two network terminals (here the network debugging tool and the serial port server) to communicate, their parameter configurations must be paired.

TCPClient Mode

TCPThere are two working modes in this mode:TCPServer andTCPNo matter which mode is adopted, one party must be the server and the other party must be the client. Only then can the client access the server. If both parties are the client or the server, communication cannot be achieved.

When the serial device server acts as a client, it must have3The corresponding relationship, Figure27As shown. (1)Working mode correspondence: The working mode of the serial port server is the server mode of the client corresponding to the network tool. (2) IPAddress correspondence: the purpose of the serial port serverIPMust be the computer where the network tool is locatedIPaddress,(3)Port correspondence: The destination port of the serial port server must be the local port of the network tool. After this setting, the serial port server can automatically connect to the network tool and send and receive data after the connection is established.

picture27Serial Device Server as Client

5.2.2.Client connects to multiple servers

When the ZLAN serial device server is used asTCPClients can connect simultaneously7PurposeIPaddress, the data sent by the serial port will be sent to7PurposeIPIf there are not so many servers, the remaining purposes will be vacant.IPThe usage is as follows:

picture28The first purposeIPand Port

picture29Remaining2~7indivualIPand Port

FirstIPAs shown in the figure28The device settings interface shown in the figure shows the firstIPCan be a domain name. The remaining 2~7PurposeIPClick the "More advanced options" button in the device settings interface to open more advanced options for settings.

all7PurposeIPAfter the settings are completed, you can connect automatically. If you cannot connect, you will wait for the "disconnection and reconnection" time and reconnect repeatedly.

TCPServer Mode

When the serial device server is used as a server, there are also3The corresponding relationship is shown in Figure30As shown, I will not explain them one by one here.

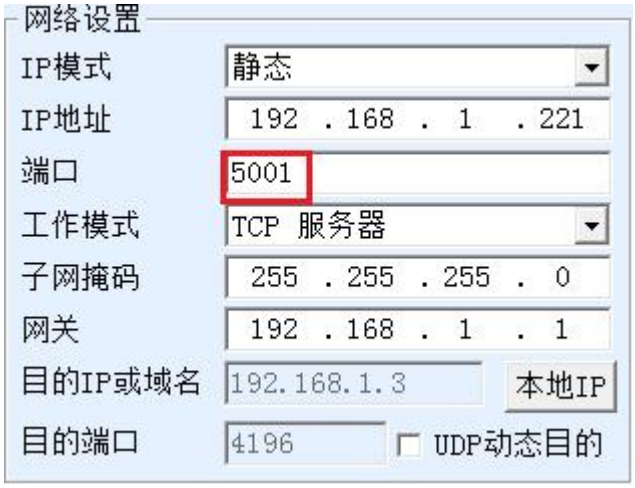
After setting this up, click the Open button of the network tool to establish a connection with the serial port server.TCPConnection, after the connection is established, data can be sent and received.

picture30Serial port server as server

When the serial port server is used as a server, it can accept30indivualTCPThe data received by the serial port will be forwarded to all establishedTCPIf you need to send data only to the most recent network packet recipient, TCP, you need to enable the multi-host function, please refer to4.7.4Multi-host capability.

5.2.4.Acting as both client and server

ZLAN serial port server supportsTCPThe client side can also acceptTCPconnection, that is, also hasTCPServer functionality.



picture31Acting as both client and server

By default, it is usedZLVircomWhen configuring, if you change the working mode to "TCP Client mode, the port (that is, the local port) will automatically become0（0In order to support TCPIn server mode, the computer software must know the local port of the device, so here

You need to specify a value, as shown in the figure31As shown, the computer software can now connect192.168.1.221of 5001The port communicates, and the device also connects as a client192.168.1.189of1024Port. Required**Notice**The local port5001is occupied by the server, so when acting as a client, the local port uses the "port +1000", that is192.168.1.189The software on the device sees that the port is5001+1000=6001.

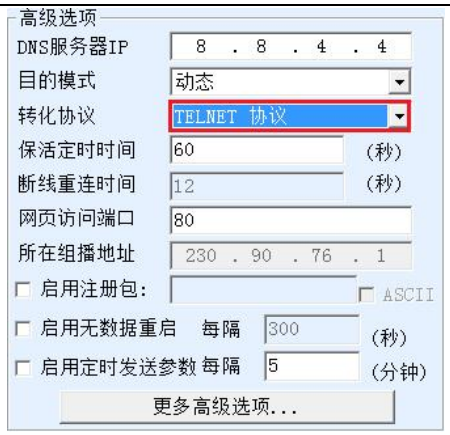
5.2.5. UDPmodel

existUDPIn this mode, the parameter configuration is shown in the figure32As shown, on the left isZLVircomThe configuration of the serial port server in the middle, and the network debugging tool on the rightSocketDlgTestFirst, both must beUDPWorking mode. Also indicated by the red arrow is the purpose of the network toolIPThe destination port must point to the local port of the serial server.IPand local port. The purpose of the serial port server is indicated by the blue arrowIPMust be the computer where the network tool is locatedIPThe destination port of the serial port server must be the local port of the network debugging tool. Only after these network parameters are configured can bidirectional communication be guaranteed. UDPdata communication.

picture32 UDPMode parameter configuration

5.3. TELNETprotocol

When using certainTelnetAfter logging into the serial server with the tool, double characters are found. For example, windowsTelnetWhen logging in. At this time, you need to select the conversion protocol asTELNENTAfter logging in using Telnet, there will be no double characters.



picture33TELNETprotocol

When usingsecureCRTAppearTABWhen the key cannot associate and double characters occur,secureCRTIt is not in "one character at a time" mode. At this time, you only need to change the device port totwenty three,becausesecureCRT inner “Send SGA(onlytwenty threeport)" is automatically checked. So our device is intwenty threeport, it will automatically enter "one character at a time" mode

picture34Port istwenty three

RevisesecureCRTFor detailed information and methods, please refer to "Telnet"Precautions for monitoring serial ports in different modes".

6.Equipment debugging

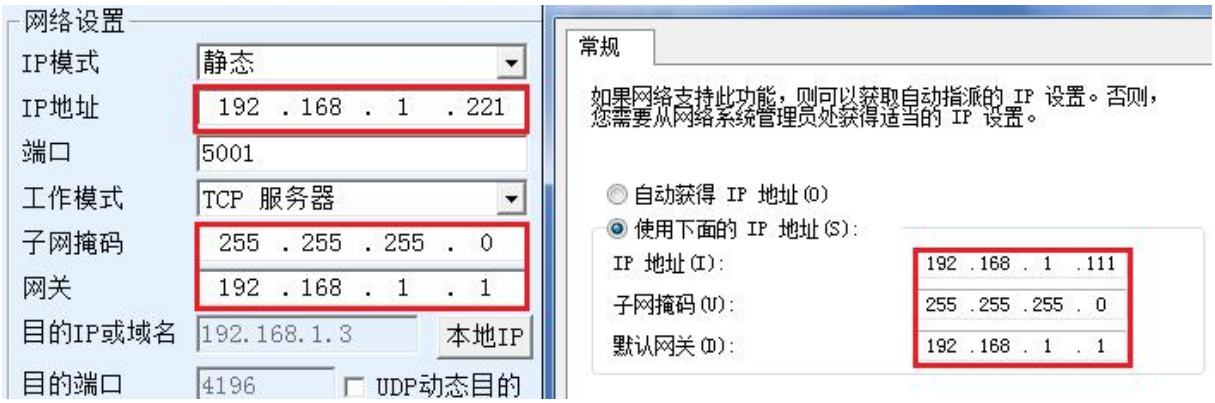
6.1.Network physical connection

The module can be connected using a crossover cable or a straight cable10M/100MSwitch or directly connect to computer network

mouth.

6.2.networkTCPconnect

When the device is dynamically acquiredIPWhen using the network port, you cannot connect directly to the computer network port. DHCP The server can be used (generallyDHCPThe server is the router in the LAN). So please specify it when connecting directlyIP. The computer also needs to specify a fixedIP.



picture35Configured in the same network segment

Whether connected directly or through a switch, when configured as staticIPWhen the device and computer are in the same network segment (unless they are communicating across gateways), as shown in the figure35shown.

becauseZLVircomSupports cross-segment search and configuration, so the ones that can be searched but cannot communicate are generally IPThe address is not configured, you can useZLVircomConfigure the devices in the same network segment.

Use after configuration3.4.6 TCPCommunication test or3.4.7The steps for virtual serial port testing can be seen in the establishment TCPWhen connected, the green light in the network port indicator is on. The green light can also be turned onZLVircomIf you see the device management list, TCPIf the connection column is "established", the green light is on, as shown in the figure36This can facilitate remote diagnostics.

picture36Connection status and data sending and receiving status

6.3.Data sending and receiving

When the green light of the network port is on, data can be sent and received between the software and the serial port server. At this time, if the software sends a data, the yellow light of the network port will flash, and the duration is generally at least1The data will also be output from the serial port of the serial server, but whether the output data is correct depends on whether the correct serial port parameters (baud rate, data bit, stop bit, check bit) are configured.

The serial port device will generally respond to the correct command. Once there is a response (the serial port sends data to the network port), the yellow light will flash. Otherwise, please check the serial port parameters or whether there is a problem with the serial port cable connection.

To facilitate remote debuggingZLVircomIt also supports remote viewing of data transmission and reception, as shown in the figure 36As shown, TXDIt is the amount of data sent by the serial port of the serial server. When refreshing the device list, if you see this value change, it means that data has been sent and the yellow light will flash.RxDIf this value changes, it means the serial device has returned data. The yellow light will flash.

6.4. ZLVircomRemote monitoring data

When using a virtual serial port,ZLVircomSupports real-time capture of data sent and received by the virtual serial port. It is convenient for users to debug the system. The usage is as follows:

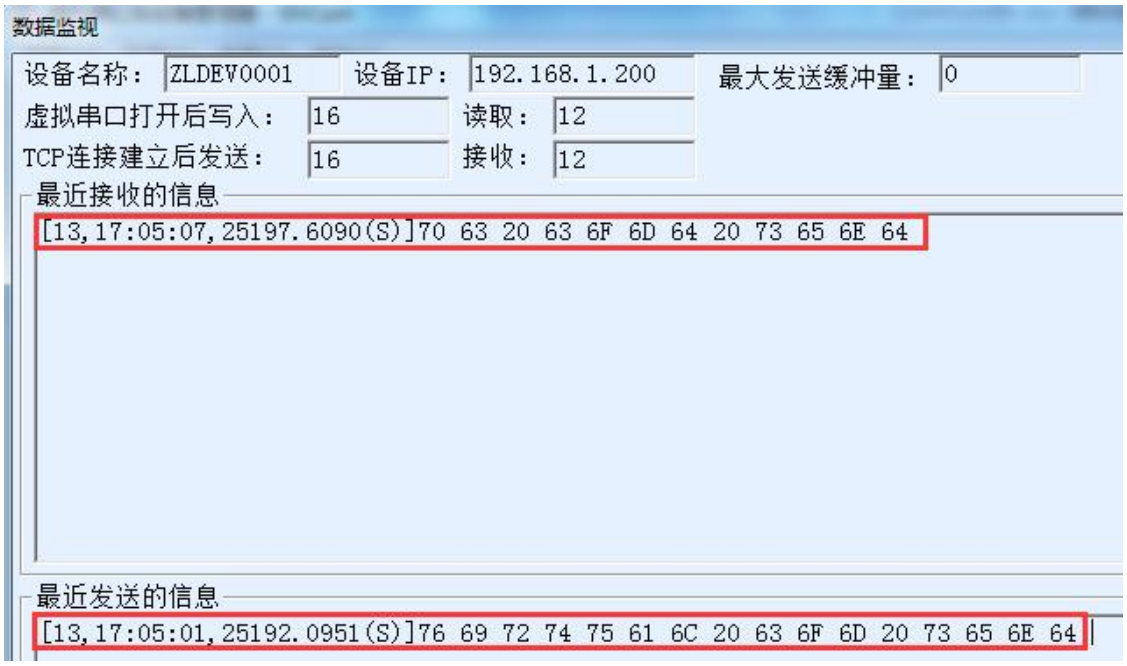
Assuming that now3.4.7The virtual serial port test method establishes the communication of the virtual serial port. Now you need to monitor the data passing through the virtual serial port. OpenZLVircomMenu / Configuration / Software Configuration / OpenvircomConfiguration dialog box.

picture37EnableZL VirocmMonitoring

In the monitoring mode, display the data transmission and reception time.3Check the options in front of it, as shown in the figure37 Then click OK. Assuming that data has been sent and received before, now select a virtual serial port to be monitored in the main interface, and then select Menu/View/Monitor, as shown in the figure38shown.

picture38OpenZL VirocmMonitoring

From the opened dialog box, you can see the instructions sent by the host computer and the instructions returned by the device, as shown in the figure39This function can facilitate on-site communication debugging.



picture39Monitor sent and received data

7. ModbusAdvanced Features

bringModbusThe serial port server with gateway function does not have station address and register. It is a communication bridge.ModbusGatewayModbus TCPInstructionsSalve ID, function code, register number, register quantity generationModbus RTUSpecify and output from the serial port. It can be regarded as a protocol "translator".

7.1.EnableModbusGateway

First of all, the serial port server should supportModbusThe gateway is the device settings dialog box.3Device Support

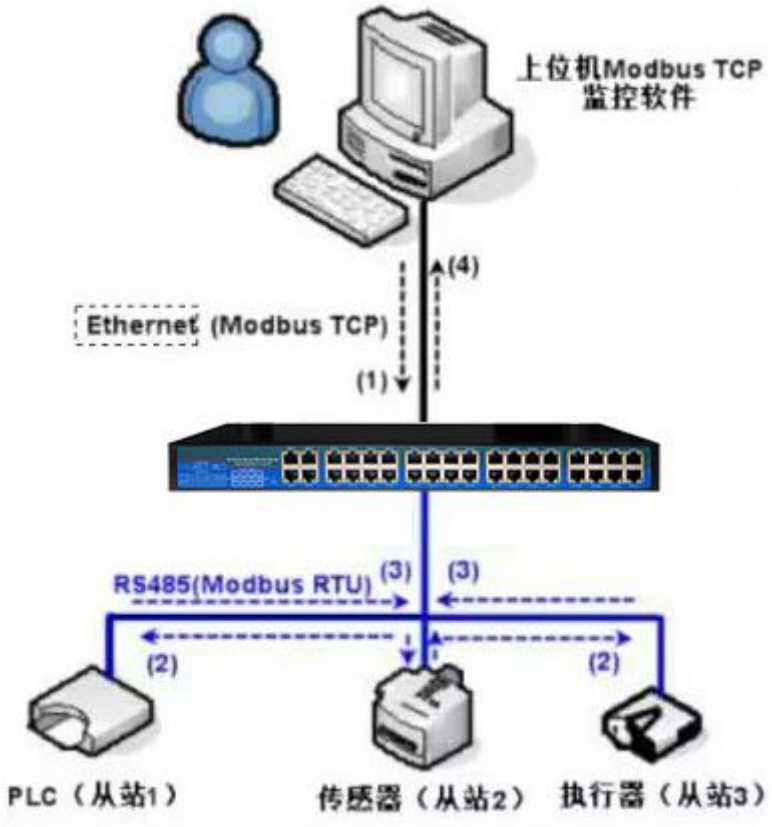
The function ofModbus TCPchangeRTU”The feature should be ticked.

By default, the serial port server is in normal transparent transmission mode. If you need to convert to ModbusGateway mode, please select "Modbus TCP--RTUThis option. After that, the device automatically changes the "Port" parameter to502（Modbusserver's port).ModbusThe gateway is enabled.

Serial PortRTUIf the device is a slave, the host computerModbus TCPSoftware ConnectionModbusGateway502Port, at this timeModbusThe gateway needs to work onTCPServer mode; if the serial portRTUAs the master station,Modbus The gateway works onTCPClient, and purposeIPfillModbus TCPThe computer where the software is locatedIP, the destination port is usually502.

7.2.StorageModbusGateway

ZLAN5W12The contents of the read register can be saved inside the gateway, soModbus TCPThe query speed can be greatly improved, and the performance is even better when supporting multi-host access.



picture40StorageModbusGateway Working Mode

As shown40Shown: NormalModbus TCPThe data flow direction is (1)-(2)-(3)-(4). That is, firstModbus TCPThe command is converted toModbus RTUThe corresponding command, and then the device respondsModbus RTUInstructions toModbus Gateway, thenModbusThe gateway is again transformed intoModbus TCPSend to the monitoring host computer.

we knowModbus TCPIt is network communication with very fast transmission speed, usually3msYou can answer within Modbus RTUyesRS485, usually only9600bpsspeed, generally sending and returning a command takes at least 30ms. Such ordinary non-storage methodModbusThe query response time of the gateway is relatively long. In addition, if there are many host computers querying data at the same time, the serial port will be congested. If the network is compared to a highway and the serial port is compared to a single-plank bridge, then the original method is to pass the traffic of the highway on the single-plank bridge.

Register-savingModbusThe gateway solves the above problems. It can temporarily store the register data obtained by querying inModbusInside the gateway,Modbus TCPWhen the query comes,ModbusThe gateway can return the command immediately,Modbus TCPOn the other hand,ZLAN5W12You can actively send instructions from the serial port to automatically update the content of the currently saved register data and save a copy of the latest register value.

In addition, the module is a fully automatic configuration-freeModbusGateway, users do not need to configure the required register addresses, function codes, slave addresses, etc.ZLAN5W12Will be sent according to the network portModbus TCPInstructions automatically identify and dynamically add these registers.

When monitoring multiple computersZLAN5W12It can show good response speed, no matter what the baud rate of the serial port is, it can generally3msThe upper level responds to the data. And it shows a good speed of real-time update of serial port data.

Register-savingModbusThe gateway is trulyModbus TCPchangeModbus RTU, it really workedModbus TCP The advantages are fast speed and simultaneous query of multiple hosts.

Note that when the serial port server is used asTCPWhen the client is not equipped with storage type function, it will automatically switch to non-storage type.ModbusFeatures:

1.Article 1Modbus TCPThe query command is a non-storage type. Because it must waitRTUThe device can reply the register content to the network port only after returning data slowly.

2.If a particular instruction is in5If there is no more query from the host computer on the network within seconds, the command will be automatically deleted and will no longer be sent from the serial port toRTUequipment.

3.Currently can store10KofModbusThe cache, for a normal single register query, stores approximately500 Instructions.

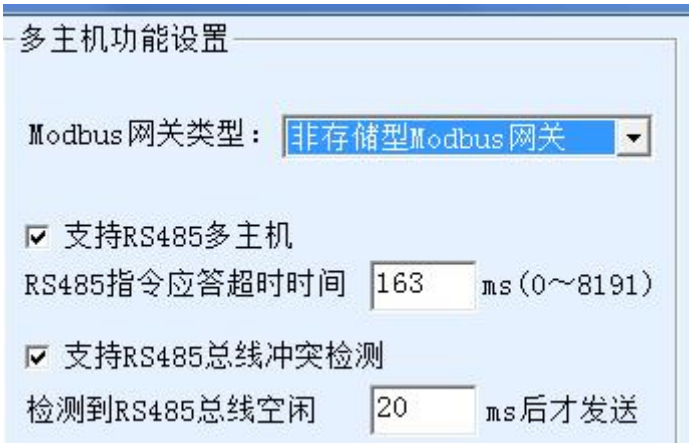
4.When multiple commands are being queried at the same time, they are sent in order, first command sent - first command response - wait485Anti-collision time (refer to the multi-host section) - the second command is sent... After the last command is responded to, it returns to the first command.

7.3.Disable storage feature

Although storage typeModbusHas a faster response speed, but some users do not wantRTUThe device does not want to receive a large number of query instructions, which will affect the internal processing speed of the instrument. In this case, the storage function can be turned off.

To disable the storage type, click the "More Advanced Options" button in the "Parameter Configuration" dialog box and select SimpleModbus TCPchangeRTU. Then go back to device settings and click Edit settings.

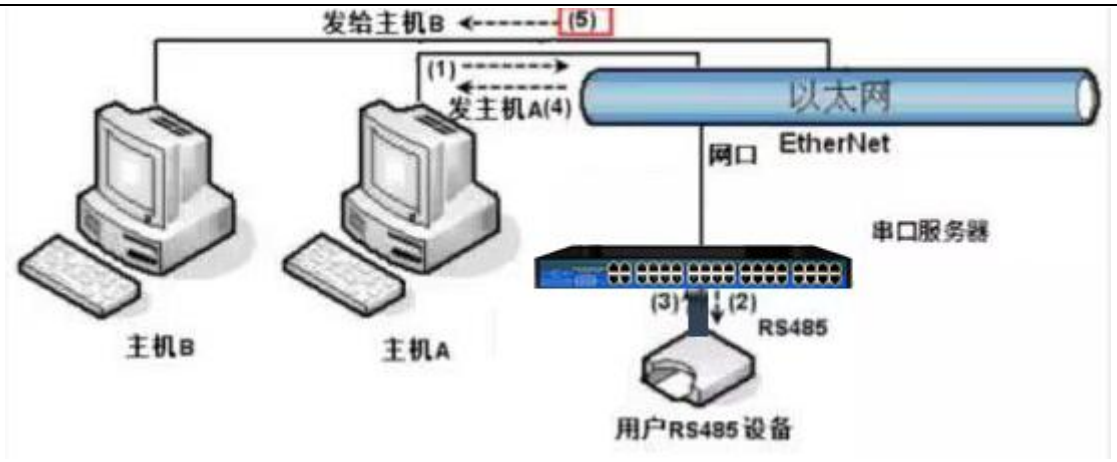
Note on useWebWhen configuring the conversion protocol, the default is non-storage type.ModbusGateway.



picture41New versionzlvir.comsetting

7.4.Multi-host capability

RS458Multi-host support" and "RS485The bus conflict detection function is the multi-host function of ZLAN. They are generally enabled and disabled at the same time. After enabling, the conversion protocol isModbus TCPThe device has storage type ModbusGateway function, otherwise non-storage typeModbusGateway; if the conversion protocol is None, it can generally be customized by the userRS485The protocol also has the function of multiple hosts accessing serial devices at the same time, which is in the pureRS485 This is not possible in a network, because multiple masters sending at the same time willRS485The multiple hosts of ZLAN serial port server canRS485The bus is "coordinated" to achieve multi-host access.



picture42Multi-host function demonstration

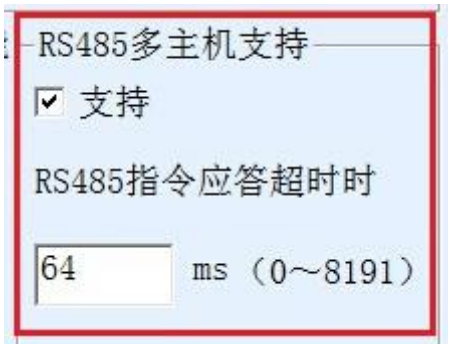
As shown42As shown, in normal mode, when two hosts:Aand hostBAt the same time, connect to the serial port server.A send(1)instruction,RS485The device receives (2)instruction,RS485Equipment Returns(3)command, but the serial port server will send the command at the same time (4)To the hostAand(5)Send to hostB. Because the hostBNo query was sent, but it also received a reply command (5)So, the hostBCommunication errors may occur. In multi-host mode, only commands (4)There will be no instructions (5)Because the serial port server will automatically remember the host to be returned, it will only return the command to the host with the most recent communication.AInquiries are only replied toA, hostBQuery reply to hostB.

Another function is that in normal mode, the hostAand hostBAt the same time, sending data willRS485The command merge on the bus cannot be recognized normally; the serial port server can schedule in multi-host modeA,BThe order of using the bus can effectively solve the conflict problem of multiple machines accessing at the same time.

When the conversion protocol is "None", the multi-host function is not enabled by default. To enable multi-host, click "More Advanced Options" in the device configuration dialog box, and then check "RS485Multi-host support".

7.5.Multi-host parameters

RS458Multi-host support" and "RS485The meaning of "bus conflict detection function" is introduced as follows.



picture43 RS485Multi-host support

inRS485The command response timeout is the maximum time interval from the serial port server sending this command to receiving the response. The time filled in should be greater than the actual maximum time interval, because if it is judged as a timeout, the next command will be sent.

picture44 RS485Anti-collision idle time

RS485Bus conflict time: Indicates how many milliseconds the serial port server waits after receiving the reply of the first command before sending the second command. This parameter actually defines the speed of command polling.20msabove. "At most Waiting time3The parameter "seconds" generally does not need to be modified.

When the user usesZLVircomSelect the conversion protocol as "Modbus TCPchangeRTUafter"ZLVricomThe above two enable boxes will be automatically checked (unless the user manually enters the advanced options to remove them), and the above two times will be automatically configured according to the baud rate.ModusIf the command is long or the conversion protocol is "None", you need to manually configure this2parameters.

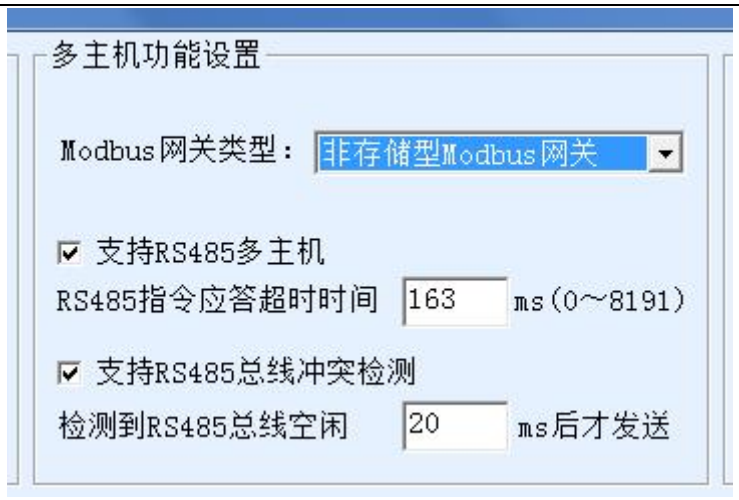
The following are recommended values for the above parameters:

1.picture44Shown as "RS485The bus anti-collision time can generally be set to twice the "packet interval" in the lower right corner of the parameter configuration interface, but the minimum cannot be less than20.

2.picture43Shown as "RS485The command response timeout is generally determined by the length of the back-and-forth response command.NBytes, the response isMbytes, the recommended setting value is: "Packet Interval" × (N+M+5）+100.

7.6.Non-storage multi-host

Some places must use non-storage typeModbusThis is because when an event occursPLCTo read the data of the register, but the data read is the previous data collected by the storage type, which is logically incorrect, so it is also necessary to support non-storage typeModbusBut on the other hand, it also needs to support multiple hosts at the same time.ModbusSelect the gateway type as non-storage typeModbusGateway.



picture45Multi-host non-storage setup

7.7.Multi-PurposeIPNextModbus

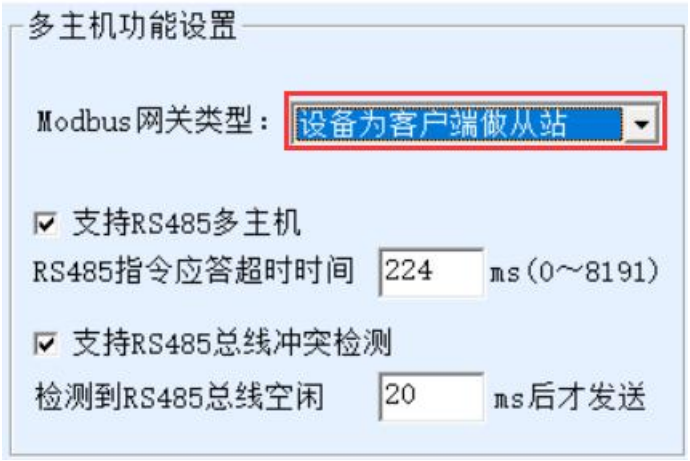
As shown42As shown, if the serial device (RTUDevice) as the master station, and the network port device (Modbus TCPDevice) as a slave station, and there are multiple network port slave devices at the same time.5.5.2.5.2.2The method introduced by the client connecting to multiple servers allows the serial device server to connect to multiple network port devices at the same time as a client.

The function that needs to be implemented at this time is:RTUAfter sending the command, it can be sent to multiple network port devices. The network port devices canSlave IDThe field identifies whether it is sent to yourself.Slave IDThe corresponding network port device responds. The network port response is sent to the serial port server and converted intoRTUThe command is sent from the serial port toRTUequipment.

At this time, it should be noted that the image44Shown as "RS485Bus Anti-Conflict Time" and Figure43Shown RS485Remove the two ticks of "Command response timeout". Otherwise, the above forwarding function cannot be realized.

Another application method is: although the serial port server is used asClientConnect multiple network devices, butRTU The device is not the master station, and the network port device still sends first.RTUThe device responds (as a slave). Then,RS485 Bus Anti-Conflict Time" and "RS485The two check boxes "Command response timeout" still need to be checked, so that multiple hosts can access oneRTUFunctionality of the device.

For the new versionZLVircomallowableModbusIn the gateway type, directly select "Device acts as a slave for the client" to complete the above settings.



picture46New versionzlvir.comsetting

8.Registration packet and heartbeat packet

Registration packets and heartbeat packets are a function suitable for communication between devices and cloud software.

8.1.Registration Package

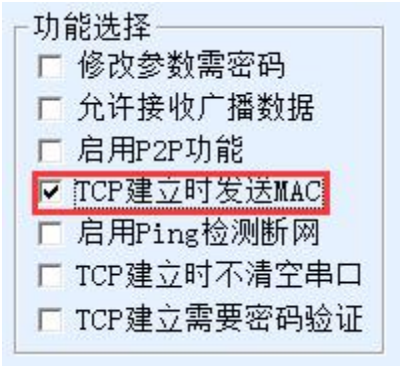
The definition of a registration package is that when the computer software and the serial port server module (hereinafter referred to as the module) establishTCPWhen connecting, the module will first send a string of codes to the software so that the software can know which module is communicating with it. This string of codes is the registration packet.

The registration package is very suitable for IoT monitoring because cloud software generally runs onInternetThe modules are scattered in various collection and monitoring points. It is very important to make the cloud software recognize the modules, which is necessary to realize the communication of the Internet of Things.

Shanghai ZLAN's serial device server provides the following multiple registration reporting methods.

8.1.1.Send on connectionMACaddress

Send on connectionMACAddress: When the module is connected to the cloud,MacThe address is sent to the cloud.MACThe address is unique, so the device can be uniquely identified. This method is simple and does not require the preparation of a registration package for each device, so it is simple and effective. How to use it: In the device settings dialog box, click "More advanced options" and find "TCPSend when createdMACAddress", tick the front, then go back to the settings interface and click "Modify settings".



picture47Send on connectionMACaddress

8.1.2. Realcomprotocol

RealcomThe protocol is a mature protocol that contains registration packets and heartbeat packets. Users can use this protocol to implement the registration packet and heartbeat packet functions.RealcomThe protocol method is: in the "Device Settings" dialog box, select "Conversion Protocol" as "REAL_COMProtocol", note that the Enable Registration Package part needs to be blank and unchecked.

picture48Enablerealcomprotocol

EnableRealcomThe protocol will no longer be a transparent transmission communication, it has the following characteristics:

1.When the device and the cloud are establishedTCPAfter connecting, the device automatically sends a hexadecimal registration packetFA 07 13 02 FA 02 MAC[5] MAC[4] MAC[3] MAC[2] MAC[1] MAC[0] FAFF.one of themMAC[5]~MAC[0] It is equipment MACaddress.

2.When the device sends data to the network, it will automatically increaseFA01 01of3Bytes header prefix.

3.Every time the keep-alive timer expires, the device sends a00of1Bytes of heartbeat packet. REAL_COMThe protocol containsMAC The address can be used as a registration package for the device. However, due to its fixed format, it can only be designed by cloud software.REALCOMThe protocol is compatible with this approach.

8.1.3.Custom Registration Package

The custom registration package method allows users to fill in an arbitrary registration package format. The method is:

The configuration is as follows:

picture49Setting up the registration package

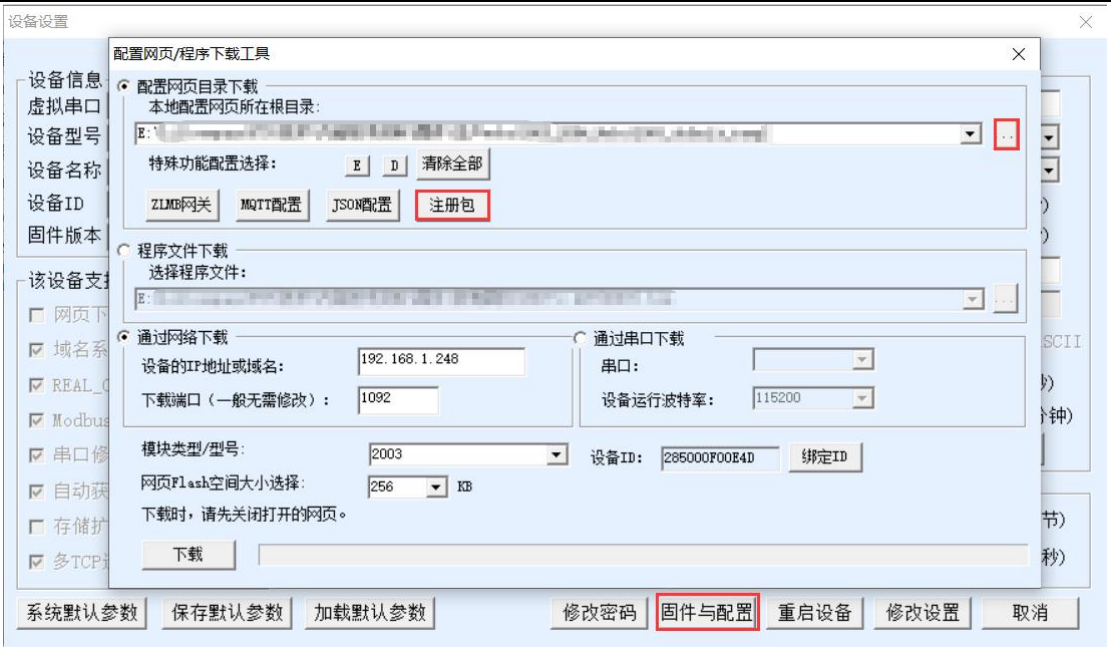
andREAL_COMThe difference between the protocols is that the registration package is enabled here and filled in31 32 33 34Such registration package information. Note that this is in hexadecimal, which means that the data actually sent is a string1234If you need to display the string, click the "ASCII"options.

When the device and cloud software are connected, it can automatically send31 32 33 34This registration package is more flexible and allows the device to adapt to the existing cloud registration package format; however, the registration package does not containMAC Such wildcards require configuring different registration packages for each device, which is cumbersome.MACAddress andREALCOMThe configuration of each device is the same in both methods, but due toMACDifferent registration packages are naturally different.

The maximum registration packet length is33Bytes. This method supportsUDPMode registration packet and heartbeat packet.

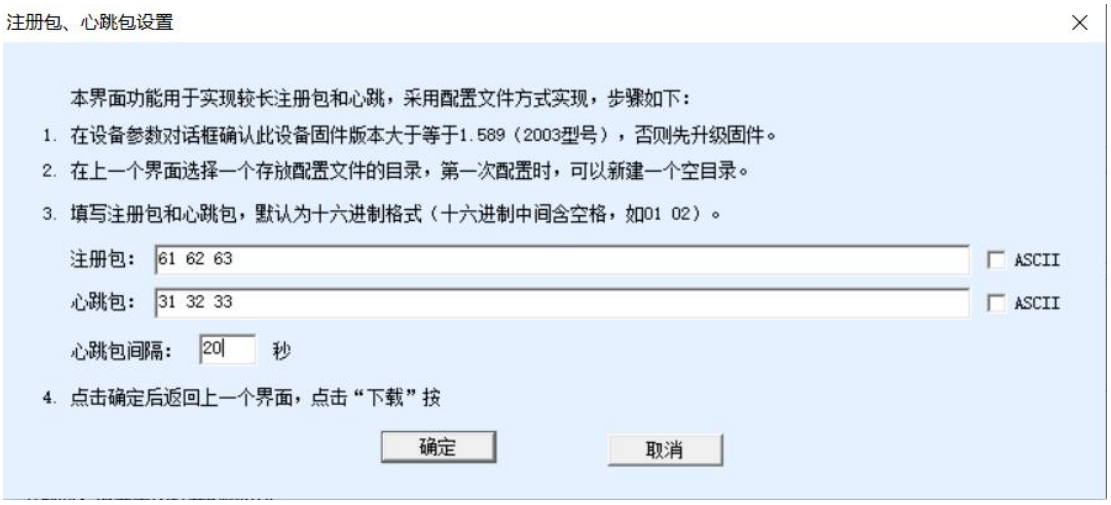
8.1.4.Configuration Files

For longer registration packages, you can use a configuration file.



picture50Download the registration package

Click the "Firmware and Configuration" button in the parameter setting dialog box to open the "Configuration Webpage/Program Download Tool", select the "Configuration Webpage Directory Download" method in the pop-up dialog box, and select an empty directory as the directory for storing configuration files. Then click the "Registration Package" button.



picture51Configuring the Registration Package

Here, set the registration package, heartbeat package, and heartbeat package interval, and then click OK. After returning to the previous interface, click the "Download" button to download the configuration file to the device.

8.2.Heartbeat Packet

Heartbeat packets are mainly used to detect whether the communication link is disconnected. The implementation method is to send a heartbeat packet to the server at regular intervals.

The software sends a heartbeat packet, which will be discarded by the server after being received and will not be considered as valid communication data.

The heartbeat packet has two main functions: first, it can let the host computer software know that the device is active; second, if the device fails to send a heartbeat, it is inTCPThe client device will automatically re-establishTCPconnection, so it is a means of restoring network communication.

picture52Keep-alive time

As shown52As shown in the figure, the sending time of the heartbeat packet is set by the "keep-alive timer".

8.2.1.Hidden Heartbeat

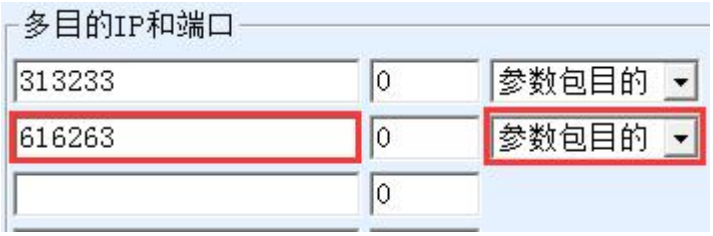
Even if no heartbeat packet is set, the ZLAN device is inTCPThe implicit heartbeat function is also enabled when the client is connected. Therefore, the implicit heartbeat function means that the device sends data, but the server does not actually receive the heartbeat data. Therefore, it cannot play the first function of the heartbeat packet, that is, the server detects whether the device is active or not; but because the device actually sends data, it can play the second function of the heartbeat packet, that is, the device detectsTCPCheck if the connection is normal. Once disconnection is detected, it can be automatically reestablished.TCPconnect.

8.2.2. REALCOMprotocol

like8.8.1.8.1.2 RealcomThe agreement states,REALCOMThe protocol can send a 00of1Byte data, this data isrealcomHeartbeat packet of the protocol.

8.2.3.Custom heartbeat packet

First follow8.1.3Fill in the registration package by customizing the registration package. Then add the heartbeat package as follows: Click the "More Advanced Options" button in the device settings.IPand the second line of the port, write16Binary heartbeat packet, and change the option on the right to "Parameter Packet Purpose".



picture53Custom Registration Package

Note that the total of registration packets and heartbeat packets should be less than33Bytes. The first line is actually the registration packet.

8.2.4.Configuration Files

Refer to the usage of the configuration file of the registration package.

9.Network port modification parameters

Modifying the network port parameters is achievedzlvir.comThe function of searching devices and modifying device parameters like software, that is, managing devices and modifying parameters through the network port of the serial device server. It is suitable for users who integrate the search and configuration functions into the user software.

The network port parameters are modified through "UDPThis is achieved through the "Management Port Protocol", for example:

1.The computer software sends the destination port in the network as1092ofUDPBroadcast data packet. When the device receives the data packet, it will return its information to the computer software to achieve the purpose of searching for the device.

2.Computer software to the device1092Port forwardingUDPModify the parameter command to achieve the purpose of modifying device parameters.

For a detailed introduction to network port modification parameters, please refer to "ZLAN Networking ProductsUDPManagement Port Protocol" document. You can also use10This is implemented by the device management function library of the device management function library.

10.Device management library

This function is suitable for users who need to integrate device management functions into their own software.UDPThe management port protocol has been integrated into the device management function libraryZLDevManageInside. This is a DLLofwindowsThe platform's development library can be usedVC,VB,DelphiAnd other development tools call.

Provide detailedAPIInterface introduction document andVCtransferDemoCase. It can realize device search, parameter modification,P2PFunction calls, etc.

You can get the development library from the ZLAN official website:http://zlmcu.com/download.htm Search for "Device Management" on the page

For details, please refer to "Zhuo LanWinP2pand Device Management Development Library》

11.Modify the parameters of the serial port

Users can read and set parameters by sending commands to the serial port of the serial server. It is suitable for users who choose chip or module-level products to be controlled and configured through the serial port. The parameters that can be set include:IPAddress, baud rate, device name, working mode, etc. After the new parameters are set, the serial server can be restarted through the serial port command.

ZLAN serial port commands have the following characteristics:

1.Serial port command uses10There are 1 byte of data preamble code, so there is no need to distinguish whether it is communication data or command by pulling down or raising another configuration pin, and there is no need to switch between command mode and communication mode, which makes it more flexible and convenient to use.

2.The command set includes multiple command formats such as saving parameters, not saving parameters, and restarting the device.

3.Can realize a variety of applications, such as reading the serial port serverMACFor example, to change the serial port server working mode,TCPThe server switches toTCPIn client mode, you can actively connect to the server;TCP The client switches toTCPYou can disconnect from the server when you log in to the server.

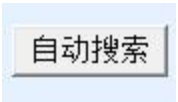
For detailed operation methods of serial port parameter modification, please refer to: "Serial port parameter modification and hardwareTCPIPProtocol Stack

12.Remote device management

Remote device management refers toZLVircomThe software can maintain and manage the device, including restarting the device, modifying parameters, and upgrading firmware.ZLVircomUser who manages the device.

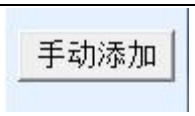
forZLVircomSoftware, as long as the device can be found in the device list, remote management can be performed. Remote management of devices can be divided into the following situations:

1.Automatic search: The device and the computer are on the same switch. In this case, whether they are in the same network segment or not, the computerZLVircomThe way to search for devices is:ZLVircomSend a broadcast query - all devices will reply with their own parameters after receiving the queryZLVircomTool. This method searches all devices at once.



picture54Auto Search

2.Manual adding: There are two cases:



picture55add manully

a)Large routers divide the network: In some large networks, broadcast packets are divided by routers, so that broadcast packets cannot reach the device end, butpingequipmentIPAll are connected. In this case, you generally need to add it manually to solve the problem. The manual adding method is to click "Manual Add" in the "Device Management" dialog box to add the head and tailIPYou can query the devices one by one.

b)Public network server queries internal network devices: The serial port server is in the internal network and acts asTCPServer mode, zlvir.comOn the public networkIPAt this time, you need to make a 1092of UDPThe port mapping is mapped to the deviceIP,Thenzlvir.comManually add this device.IPIt is the public network on the device sideIP.

3. TCPClient: Device asTCPWhen the client isIP（116.15.2.3)of4196Port InitiationTCPOnce the connection is established, it will automatically send a message to the destination port (here4196) ofUDPPort (note notTCP port) to send its own parameter system, so thatzlvir.comOn this computer (116.15.2.3) can search for the device. If the destination port is not4196You need to modify zlvir.comThe default parameter receiving port is to modify the menu/configuration/software configuration/default listening port, and then startzlvir.comIf pop-upTCPIf there is a port conflict, ignore it and continue executing.

picture56Client

4.Scheduled sending parameters: Even inTCPFor a serial port server in server mode, you can also check the "Send parameters regularly" function to set the5Minutes to send parameters to the destinationIP(here it is116.15.2.3) destination port. The port on this server receives the parameterzlvir.comThese devices can be managed.

picture57Scheduled sending parameters

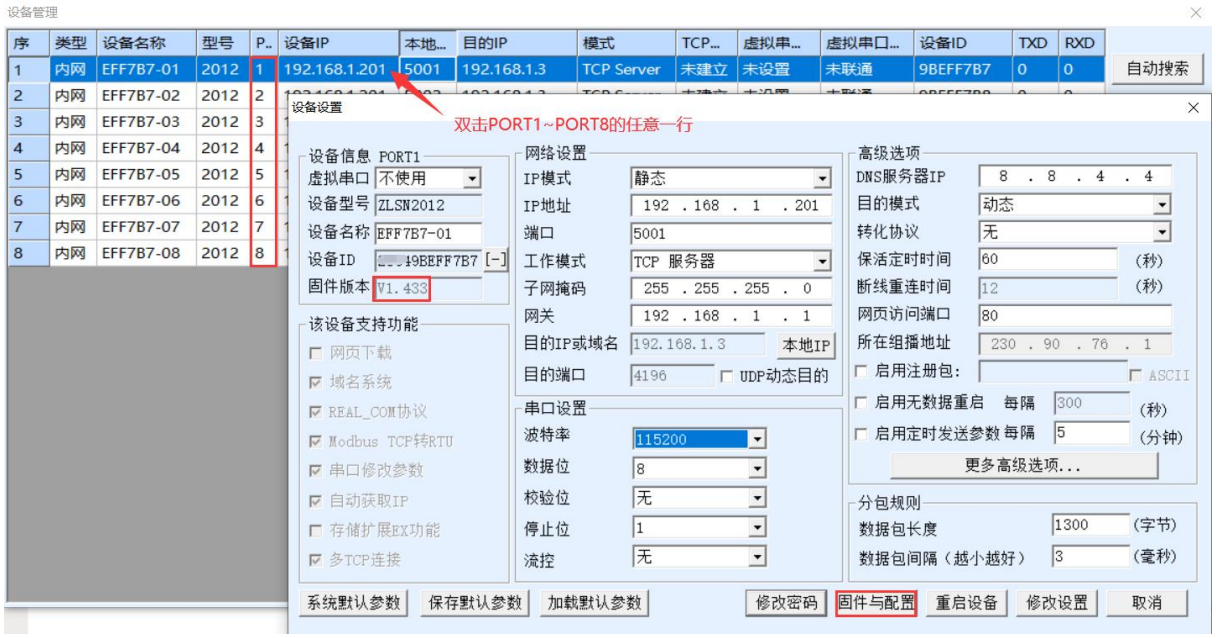
To facilitate device identification, if remote management is required, please give the device an easy-to-remember name.

5.Equipment operation and management: After enabling the cloud management function on the device side, you can see the device on the designated backend with ZLAN equipment cloud management installed. You can perform device configuration, firmware upgrade, configuration download, etc.

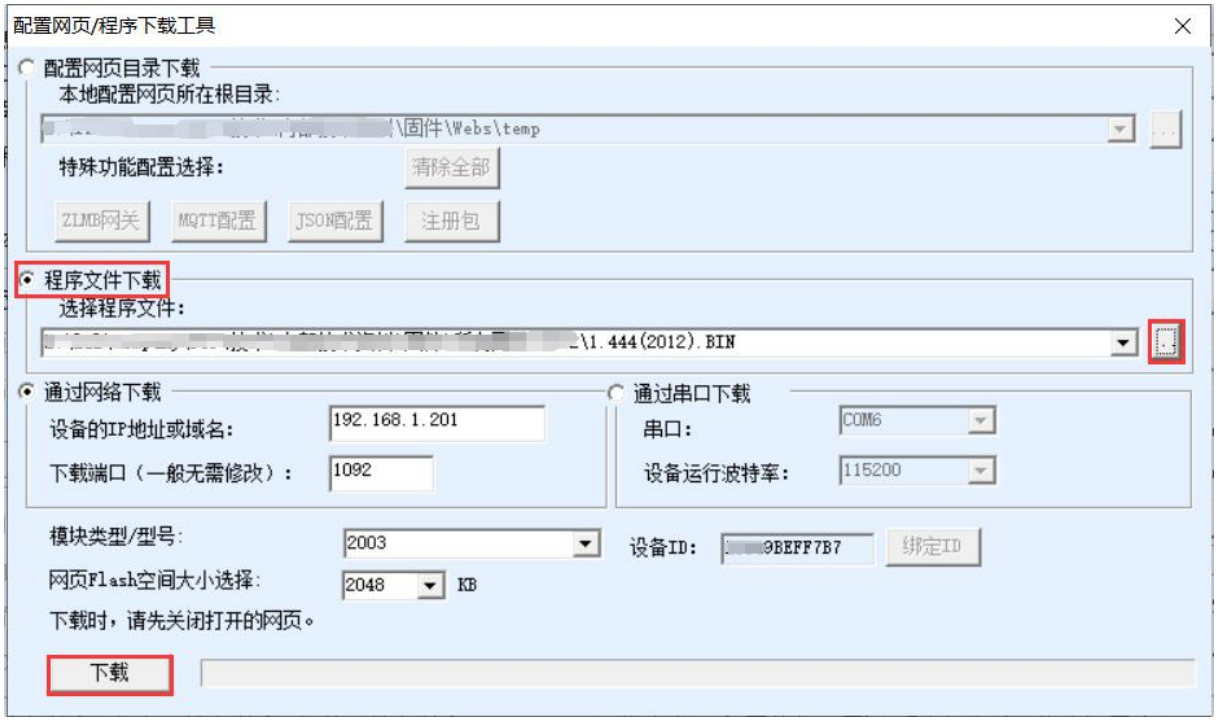
13.Firmware upgrade method

picture58Module firmware

The module's firmware can beVircomSoftware, downloaded from the Internet.1.442is the firmware version, select it in the device listPORTNo.1~8Click the Edit button (or double-click) on any of the following: Then click Firmware and Configuration.



picture59Upgrade steps1



picture60Upgrade steps2

Select "Program File Download", then select the corresponding upgrade file and click "Download". The download process takes about half a minute. After the upgrade is completed, it will automatically restart.PORT1~PORT8The upgrade is complete. After the upgrade, you can check that the firmware version number has been modified.

14.Order Model

model	illustrate
ZLAN5W12	Thirty-two serial port servers
ZLAN5G12	16-port serial server
ZLAN5812	Eight serial port servers
ZLAN5W12-422	Thirty-two serial port server422
ZLAN5G12-422	16 serial port server422
ZLAN5812-422	Eight serial port server422

15.Package

picture61 ZLAN5W12Package

Packing List

model	quantity	illustrate
ZLAN5W12	1	

power cable	1	
Rack mounting ears	2	One on each side

16.After-sales service and technical support

Shanghai ZLAN Information Technology Co., Ltd.

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fax:021-64325200

Website:http://www.zlmcu.com

Mail:support@zlmcu.com