

Serial Device Server - RS232/RS485 to Ethernet converter

USR-TCP232-300

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File version: V1.1

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Serial Device Server - RS232/RS485 to Ethernet converter is an Equipment for convert TCP or UDP socket data to RS232 or RS485, easy to use, low price, low power, 32 bits arm on board, high speed, high Stability.

Our concept: simple functions, stable performance, reasonable price.

We can supply Custom services, hardware, software and Server, welcome to contact us.

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1. Product introduce

1.1 Introduction

Serial Device Server - RS232/RS485 to Ethernet converter is an Equipment for convert TCP or UDP socket data to RS232 or RS485, easy to use, low price, low power, 32 bits arm on board, high speed , high Stability.

This is a multi-functional embedded Ethernet serial data conversion device that integrates a TCP / IP protocol stack, the user can easily use it to network functionality of embedded devices, upgrade the existing serial devices into a network function, saving human and material resources and development time, make the product faster to market, enhance their competitiveness.

There is 10/100M auto detected RJ45 interface, RS232 bound rate up to 230.4Kbps, can work at TCP Server, TCP Client, UDP and UDP server mode, setup easily via RS232 or RJ45.

1.2 Function Features

- 100M high speed Ethernet card, 10/100M auto detect interface;
- support AUTO MDI/MDIX, Can use a crossover cable or parallel cable connection;
- RS232 bound rate can set up from 300 to 256000
- RS485 bound rate can set up from 300 to 115200
- Work mode TCP Server, TCP Client, UDP, UDP Server
- Virtual serial port supported;
- across the gateway, across switches, routers
- Can work in LAN, also can work on the Internet (external network)
- Working port, destination IP address and port can be easily set up;
- Automatically connection to ensure a reliable network to establish the TCP connection;
- Transmission distance: RS232 - 15 meters, RS485 - 1000 meters, cable 200 meters (after the switches together through the Internet, no distance limit)

1.3 Product Features

- 32 bits ARM CPU inside;
- LAN : 10/100Mbps; protect: Built-2KV isolated electromagnetic;
- RS232 x 1: TXD RXD GND;
- RS485 x 1: A (Data+) B (Data-); 120 Ohms Termination Resistance on board.
- network protocol: ETHERNET ARP IP UDP TCP ICMP;
- Software tool: configuration software, TCP/UDP test soft, RS232 debug soft.
- Configuration method: RS232 or via Ethernet, free software available.
- Power : DC 5V / 500mA
- Size (L×W×H): 90×83×25(mm)
- Operating temperature: -25~75°C.
- Save the environment: -40~85°C, 5~95%RH.

1.4 Applications Area

Serial device server module for connecting serial industrial automation equipment such as PLC, sensors, meters, motors, drives, bar code readers and displays and design. Serial server module is widely used in attendance, access control systems, Canteen machines, POS systems, building control, fire control, the banking system, engine room monitoring, UPS monitoring, power, oil, environmental monitoring, industrial applications and other areas all need to serial devices Data network management where you can use a serial device server solution.

1.5 Order information

Name	Model	interface	Explain
Ethernet card for MCU	USR-TCP232-T	TTL	For PCB embedded customers use, with RJ45 Block
RS232 to Ethernet convert module	USR-TCP232-2	RS232	RS232 to TCP/IP
RS232/RS485 to Ethernet convert module	USR-TCP232-24	RS485/RS234	RS232/RS485 choose via Jumper
Ethernet to TTL module	USR-TCP232-D	TTL	DIP module, For PCB embedded customers use, with out RJ45
Serial Device Server (this product)	USR-TCP232-300	RS232/RS485	With shell serial servers, network setting parameters

Model Description: USR is our brand, TCP232 that TCPIP to serial module product, 2/4/T that serial-side level in the form.

1.6 Electrical parameters

Operating voltage: 5V
 Operating current: 200mA
 Operating Temperature: -25 ~ 75 ° C
 Storage Temperature: -40 ~ 85 ° C
 Storage Humidity: 5% ~ 95% RH



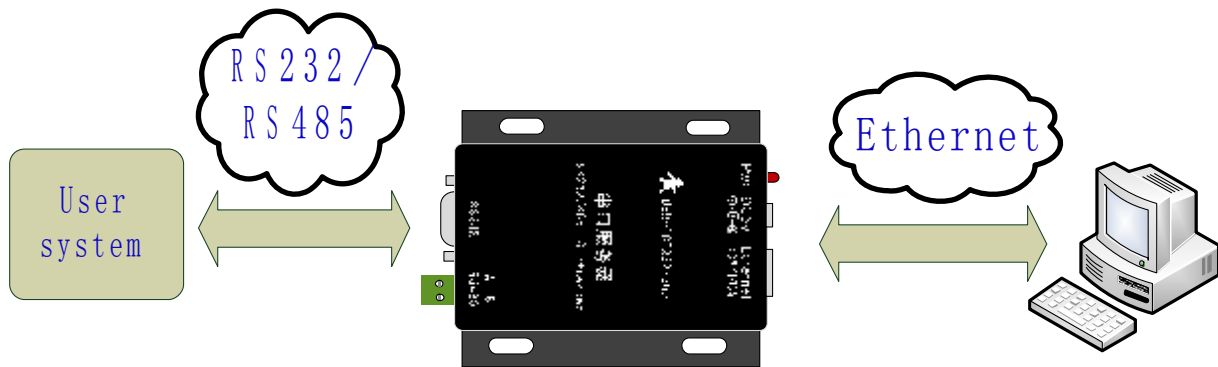
1.7 Packet list

- 1. Serial Device Server - RS232/RS485 to Ethernet converter * 1
- 2. 110~240V AC to 5V DC power adapter * 1
- 3. Network cable * 1
- 4. RS232 cable (Male to Male: 2-3 3-2 cross) *1
- 5. CD with soft and user guide in English *1

2. Work mode

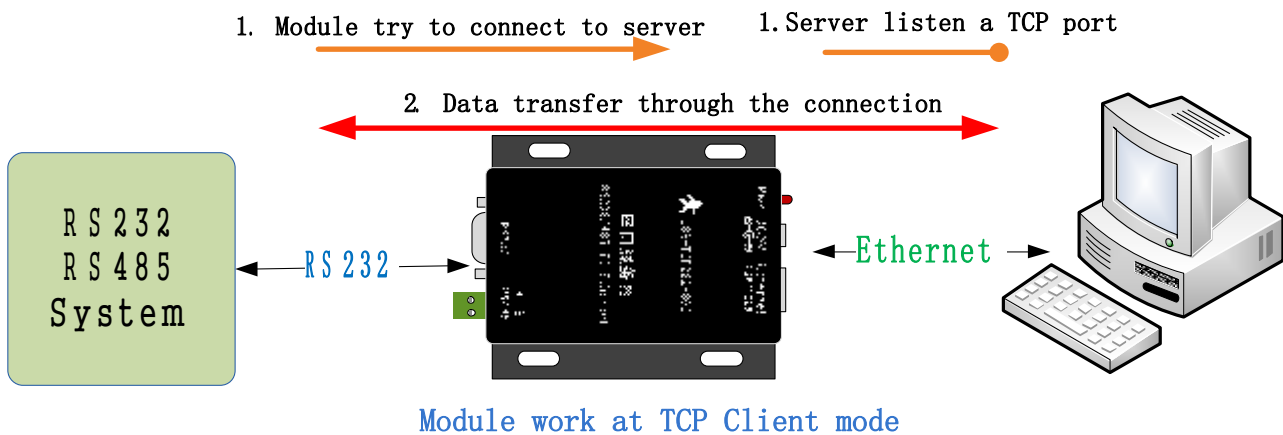
2.1 System Block Diagram

USR-TCP232-300 is bridge to connect the network to Serial device, with the RS232/RS485 to Ethernet convert module; users can easily manage and control network devices, application diagram below.



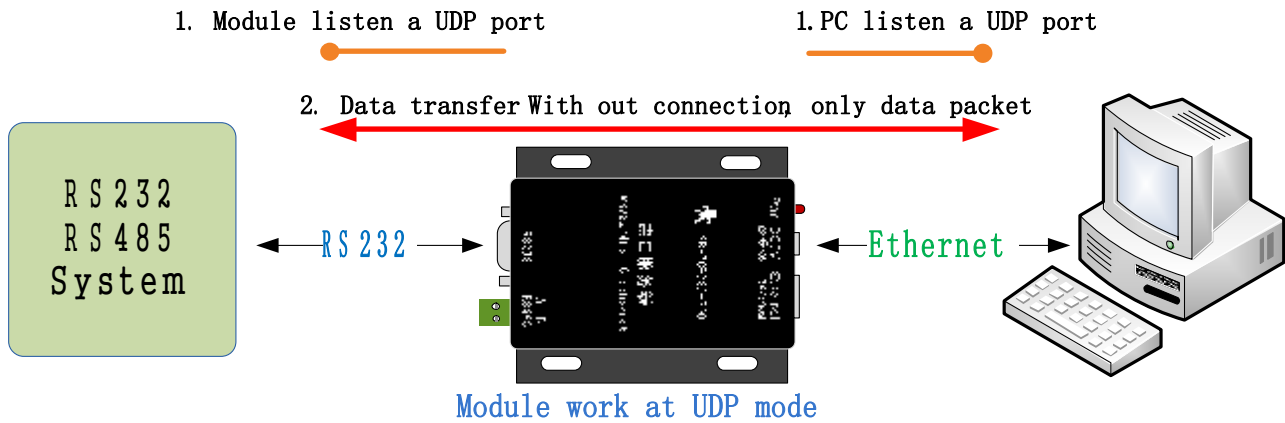
2.2 TCP Client mode

When work at TCP client mode, the module auto connect to destination IP and port, make a TCP connection for send or receive data. Destination IP can be a WAN IP or Ethernet IP.



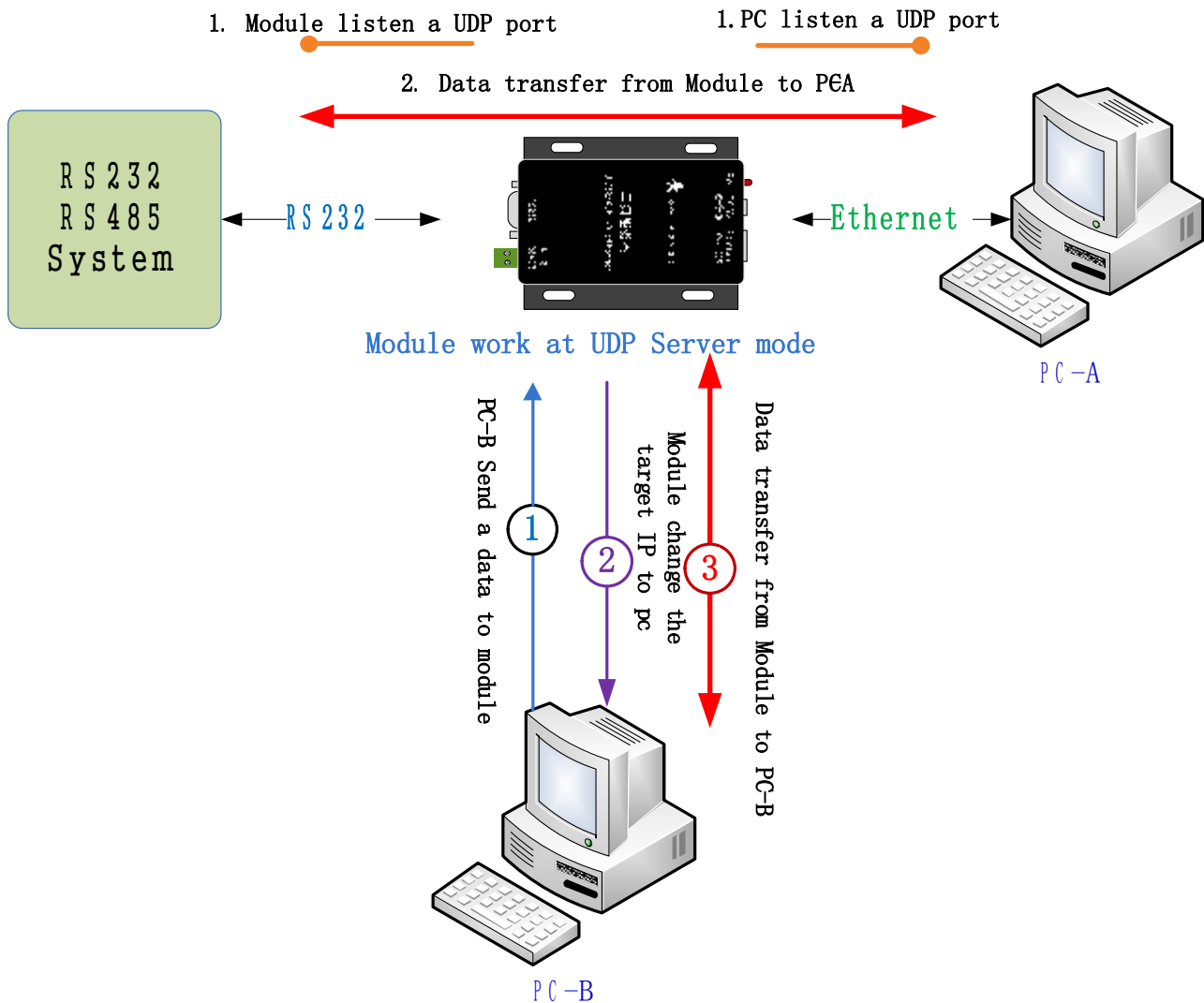
2.3 UDP client mode

Work at UDP mode, Module listen a UDP port, and pc listen a UDP port, when need to send data, UDP packet will be send.

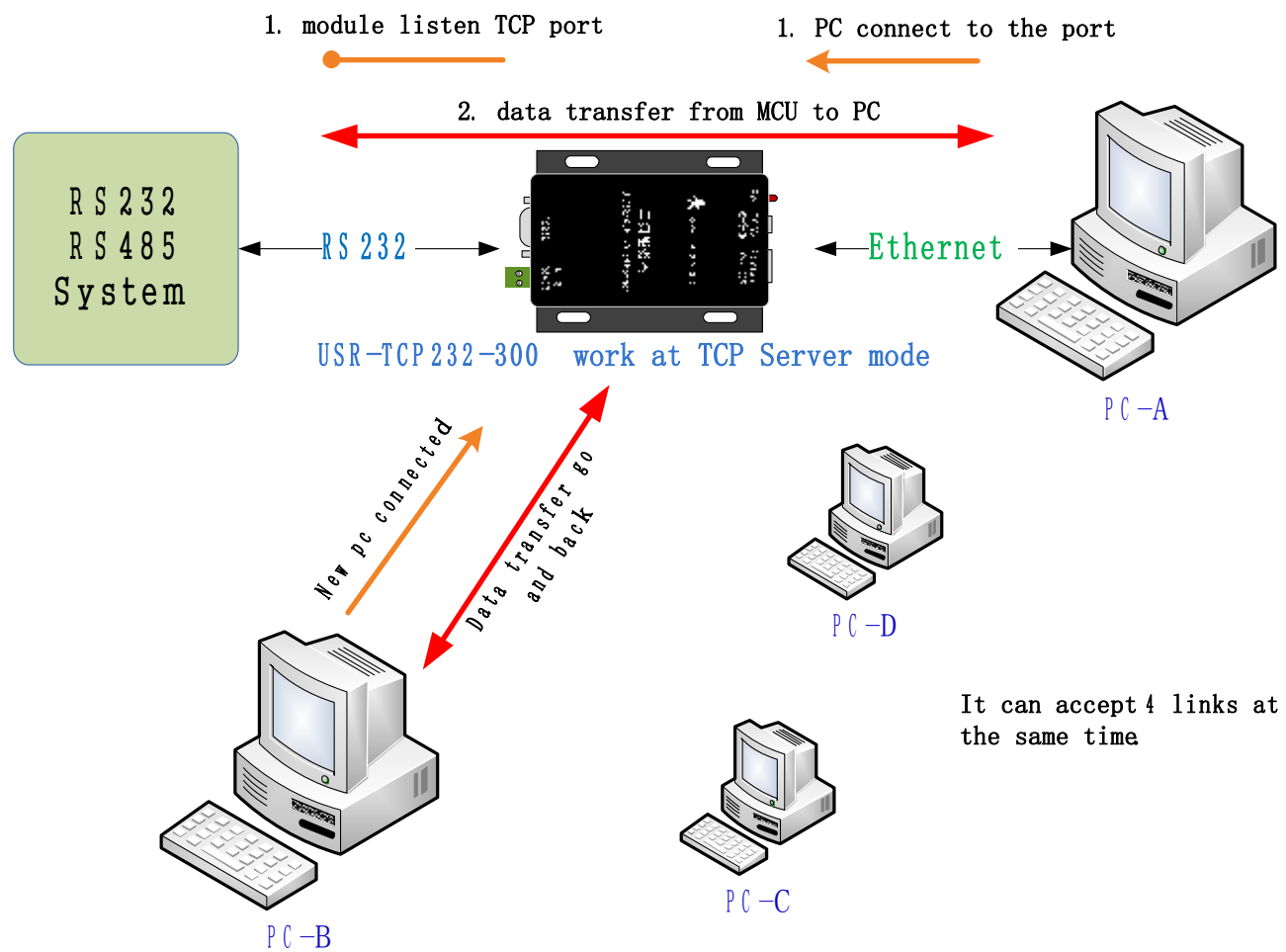


2.4 UDP server Mode

Like the socket UDP server in pc API. Many to one data transfer supported, the data from uart/232/485 part will be transformed to the last UDP packet's address.



2.5 TCP server Mode



3. Hardware Description

3.1 LED status

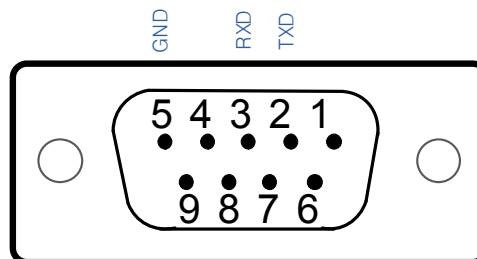
There is two lamps in RJ45 connector, one is green, and the other is yellow. And 1 power led.

LED	name	description
red	Power	Light When Power on
green	Link state	Light when 100Mbps network linked
yellow	Data transfer	Blink when there is data in or out

3.2 Interface Description

RS232 interface:

RS232 use 9 pin female (hole), only 3 pins in use, others are NC, the detail is below.



ID	Mark	Description
2	TXD	RS232 Send of module
3	RXD	RS232 Receive of module
5	GND	Ground

We can offer two kinds of serial lines, if needed, please choose to buy:

1. Male to Female direct serial cable: connect serial server and the computer directly to debugging and Testing.
2. Male to Male and Cross Pin2 and Pin3 serial cable: used to connect RS232 serial port server and general user equipment.

RS485 interface:

RS485 has two lines A (data+) and B (data-), 120 Ohms Termination Resistance on board.

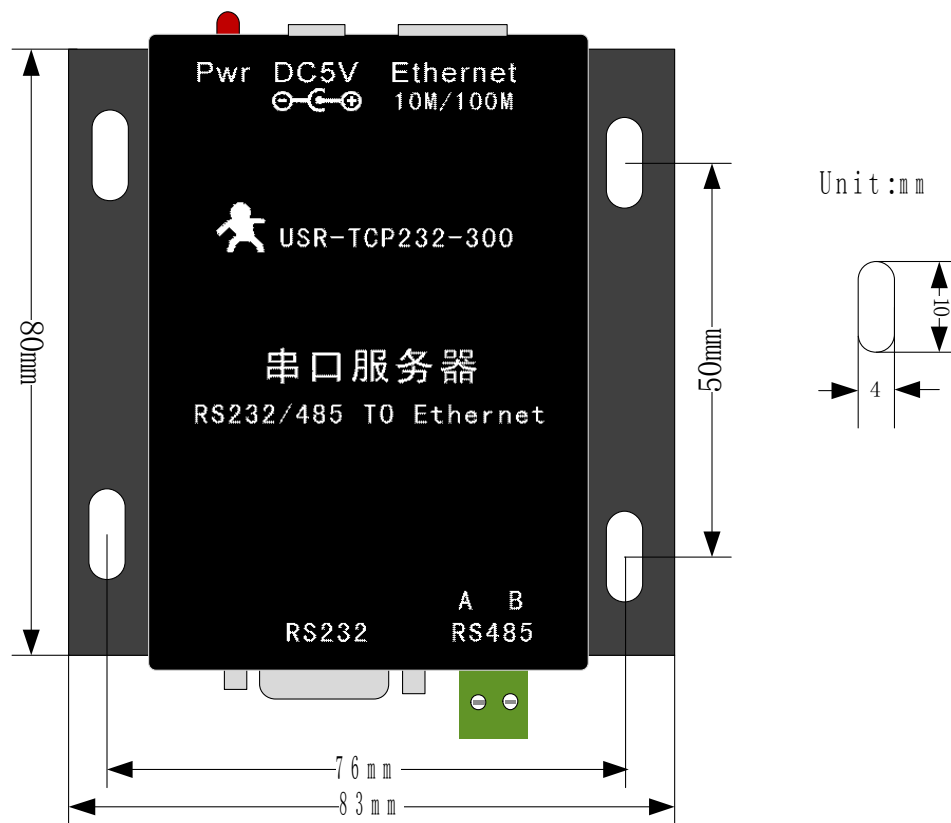
Notice: this module use Jumpers to change work for RS232 or RS485, by default it work at RS232 mode, if you need to use RS485, please open the box and change the jumpers.

RJ45 internet interface:

Auto detected 10M/100M RJ45 interface, support AUTO MDI/MDIX, that is to say you can use crossover cable or a straight cable to connect it to PC for test.

Pin	Name	Description
1	TX+	Transceiver Data+
2	TX-	Transceiver Data-
3	RX+	Receive Data+
4	n/c	Not connected
5	n/c	Not connected
6	RX-	Receive Data-
7	n/c	Not connected
8	n/c	Not connected

3.3 Mechanical Dimensions



4. Configure

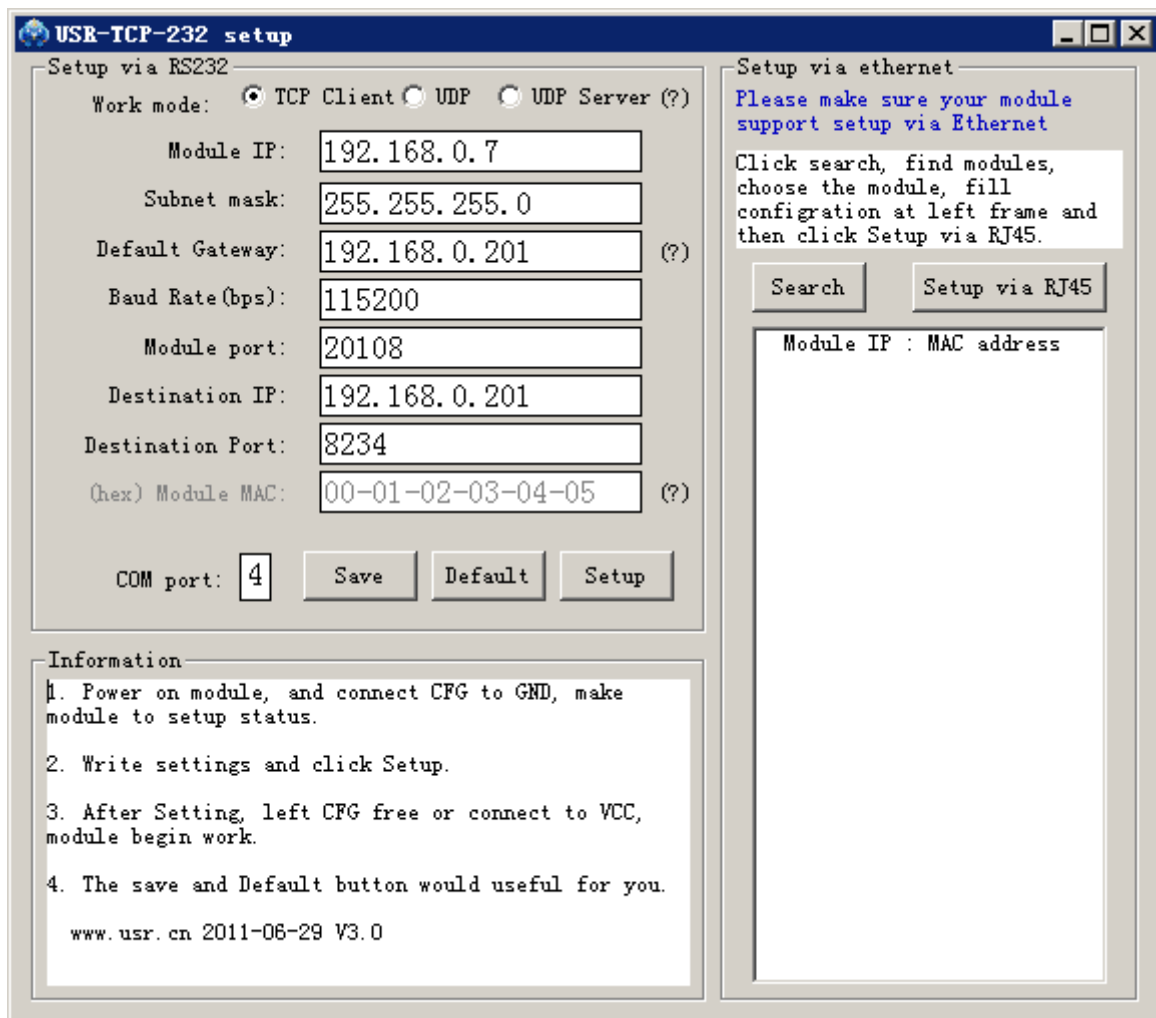
Parameters: work mode, source IP, source port, net mask, gateway, UART baud rate, destination IP, destination port.

4.1 configure through RJ45

Note: This module does not support network settings by default, if you need network settings module ,please tell us before buying, network settings and serial port settings can only choose one.

The steps for setting via RJ45:

1. Connect the module to the LAN with PC or connect to PC, power on the module.
2. Open the setup software, click Search, find modules, and choose the one you want to change settings.



3. Fill the settings you want at the left frame, and click **Setup via RJ45**.
4. (Optional step) after setup, the module will restart in 5 seconds; you can re click Search to check new config.
5. Power down the module and Power on, the module will work at new configuration.

5. Model test

5.1 Default work mode test

The default work mode is TCP Client and the setting is same as the picture show on last page.

First, you can ping the module, if you are in the same LAN with the module.

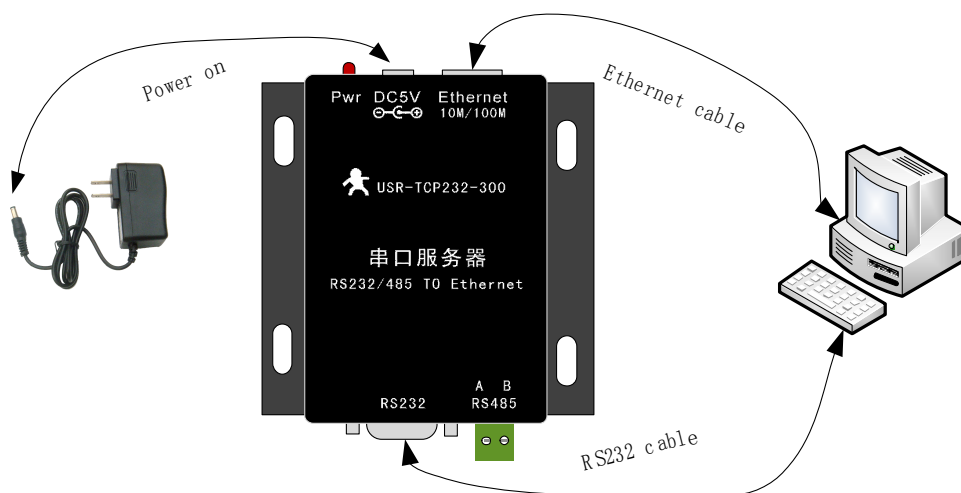
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Pinging 192.168.0.7 with 32 bytes of data:

Reply from 192.168.0.7: bytes=32 time<1ms TTL=128
Reply from 192.168.0.7: bytes=32 time<1ms TTL=128
Reply from 192.168.0.7: bytes=32 time<1ms TTL=128
Reply from 192.168.0.7: bytes=32 time<1ms TTL=128
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Reply from 192.168.0.7: bytes=32 time<1ms TTL=128
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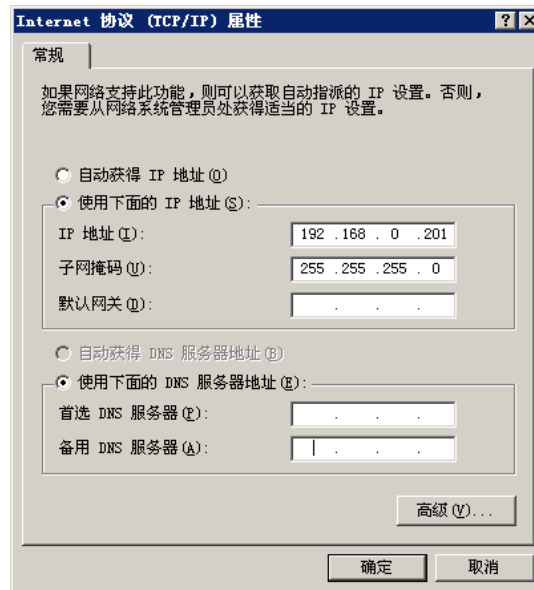
Default work mode test:

1. What you need for test, A PC with a RS232 interface, 5V Power adapter, RS232 cable, Ethernet Cable, Test software. If your PC has no RS232 interface, you can use a USB to RS232 convert product.

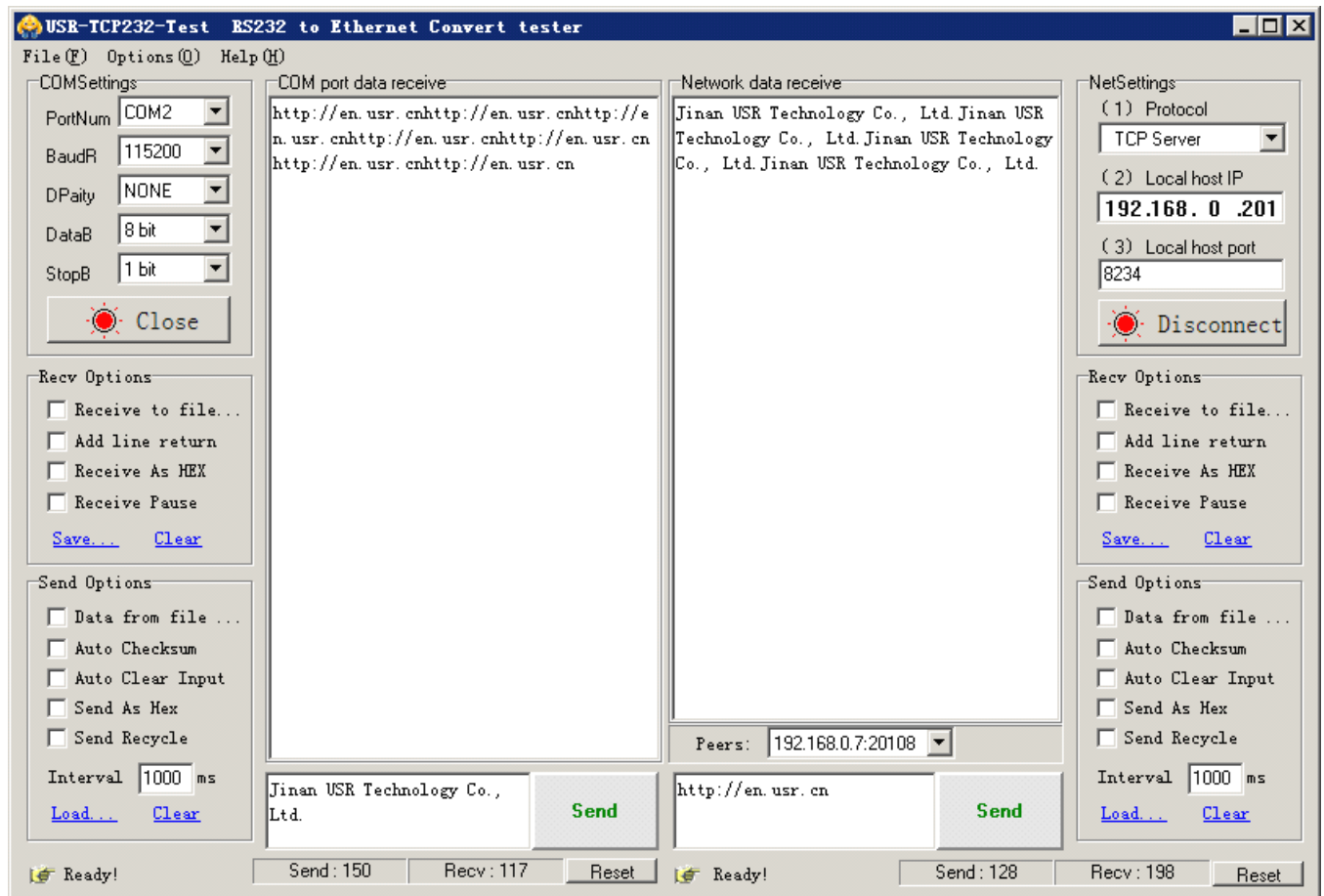
2. Hardware connects: Connect the module to your PC, RS232 to PC's RS232 and Ethernet RJ45 to PC's RJ45 Ethernet, you can use the Cross or Directly Connect net cable, because the module support AUTO MDI/MDIX.



3. Setup the PC IP address to 192.168.0.201



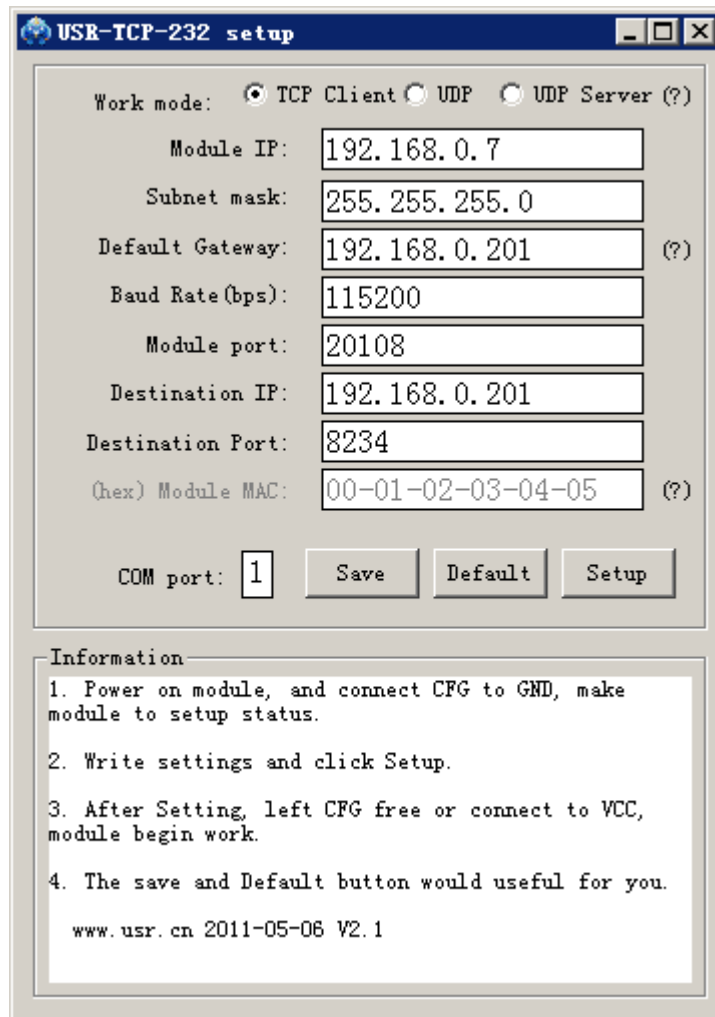
4. Open the test software, choose Correct COM port, open com port, listen TCP port.



1. After a short while, the module will connect to the software, as you can see 192.168.0.7:20108.
2. Now you can send from RS232, receive from Ethernet; and send from Ethernet, receive from RS232.

5.2 virtual COM

Single-port TCP/IP - serial bridge (RFC 2217)



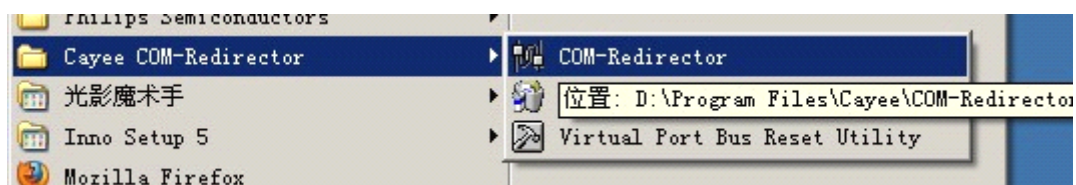
The image shows the 'USR-TCP-232 setup' window. It has a title bar with a globe icon and the text 'USR-TCP-232 setup'. Inside, there's a 'Work mode:' section with three radio buttons: 'TCP Client' (selected), 'UDP', and 'UDP Server (?)'. Below this are several input fields: 'Module IP:' (192.168.0.7), 'Subnet mask:' (255.255.255.0), 'Default Gateway:' (192.168.0.201) with a '?' icon, 'Baud Rate(bps):' (115200), 'Module port:' (20108), 'Destination IP:' (192.168.0.201), 'Destination Port:' (8234), and '(hex) Module MAC:' (00-01-02-03-04-05) with a '?' icon. At the bottom left is a 'COM port:' dropdown set to '1'. To the right of this are three buttons: 'Save', 'Default', and 'Setup'. Below the input fields is an 'Information' section with a list of four steps: 1. Power on module, and connect CFG to GND, make module to setup status. 2. Write settings and click Setup. 3. After Setting, left CFG free or connect to VCC, module begin work. 4. The save and Default button would useful for you. At the bottom of the information section is the text 'www.usr.cn 2011-05-06 V2.1'.

1. setup the module
2. Install VSPM

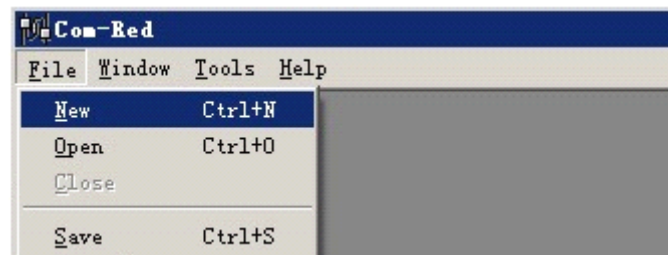


COM-Redirecter.EXE

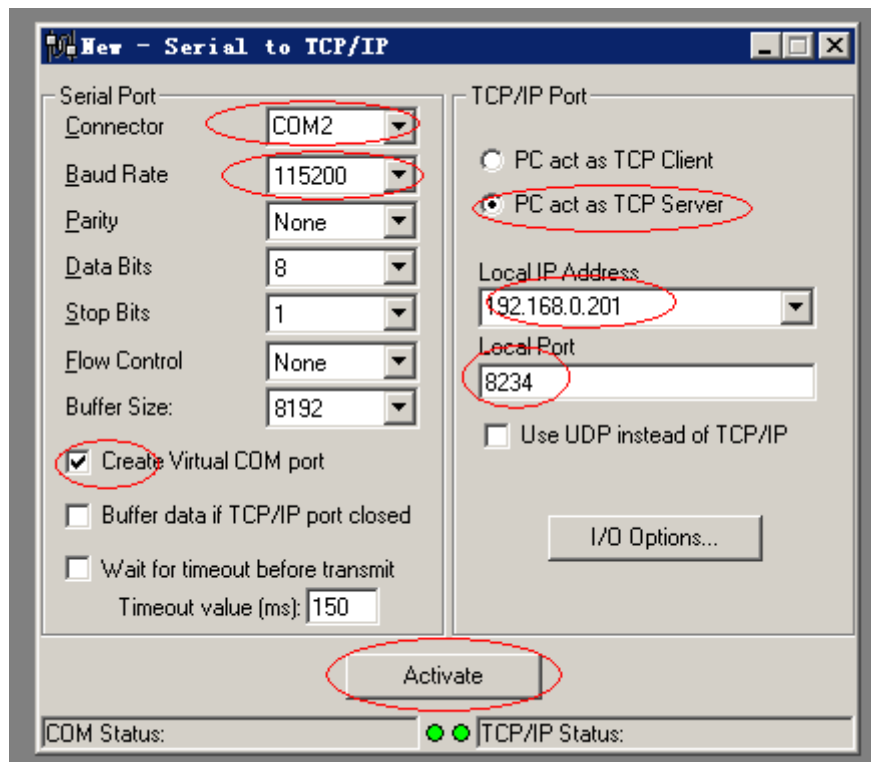
3. Open VSPM,



Add virtual COM.



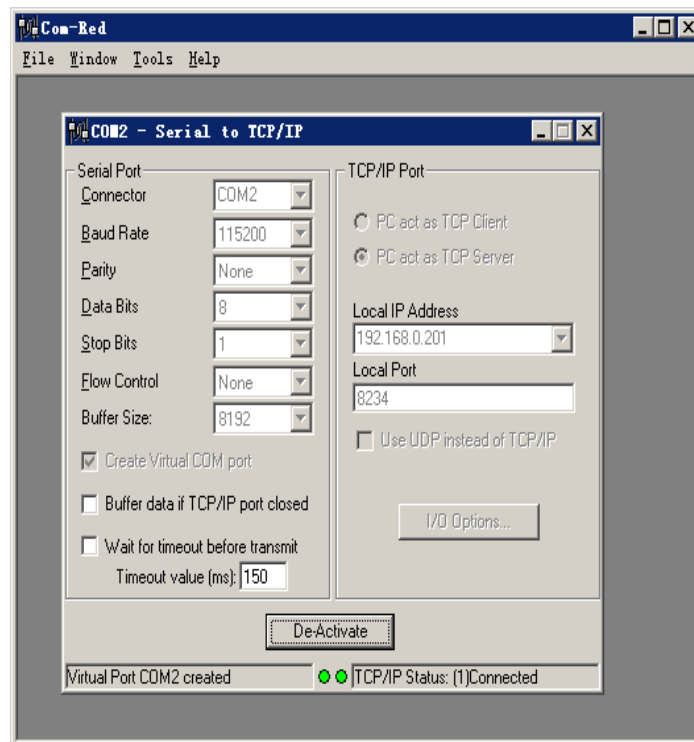
4. Setup as the follow pictures, you need to notice COM port, bond rate and work mode of PC, then click **Activate**.



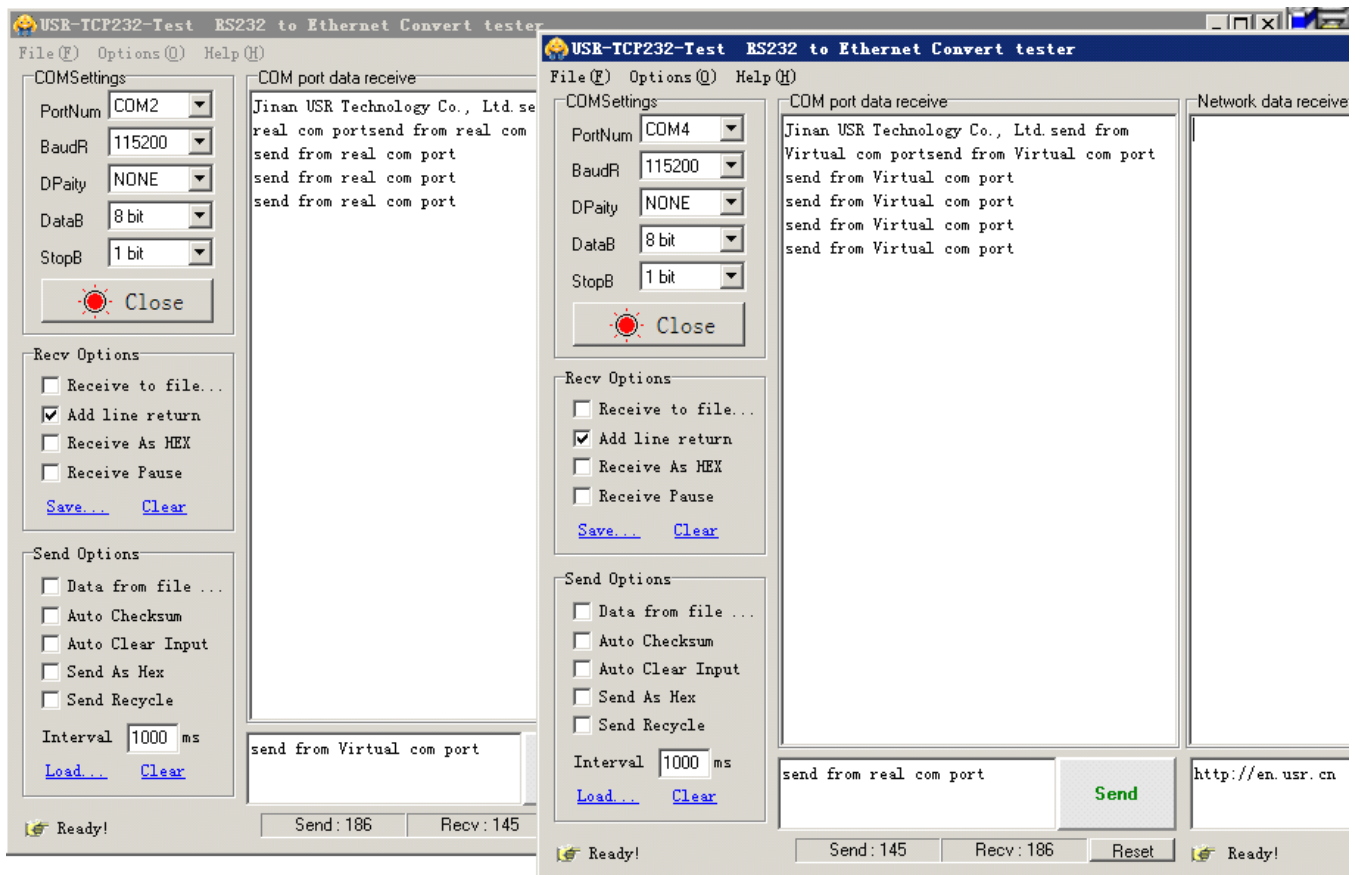
5. After Activate click, a Virtual COM port COM2, will be created, COM2 will receive data from TCPIP socket, and send data to COM2 will convert to TCPIP socket data to remote Equipment.

If create failed, please notice to see error notice and log, when use Virtual COM Port, you should close other software who use the same TCPIP port.

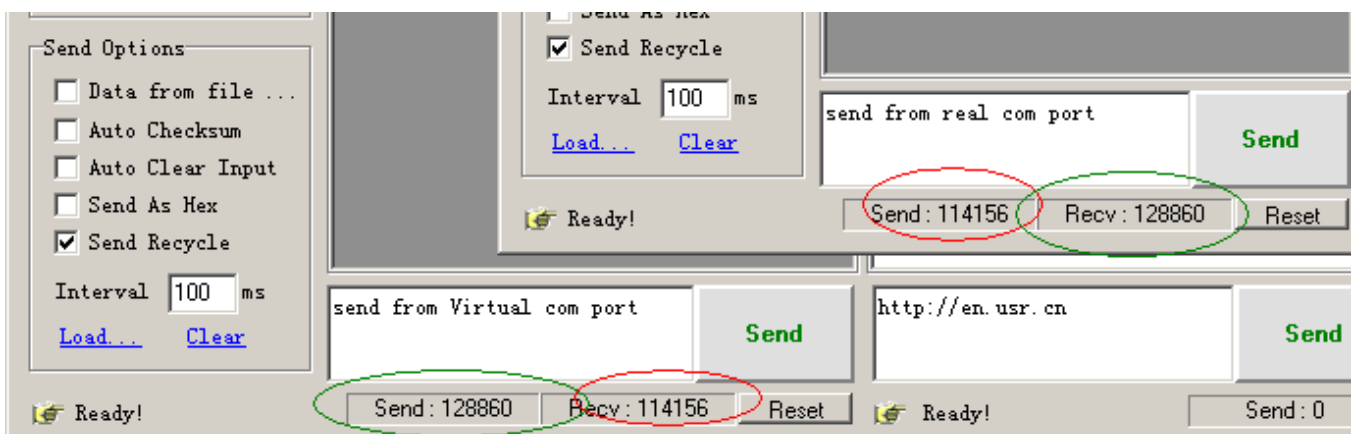
The success picture as follow:



At this point, you can use your equipment as an ordinary serial port, and operate of local virtual serial port will converted to operation of the remote module RS232. The figure is show send data between the two serial port.



Test 100ms recycle send, send and receive 10,000 bytes, every thing is ok.



6. Contact us

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7. Doc History

Version 1.0 2011-05-26

Version 1.1 2011-06-30 add new test software

Version 1.2 2011-08-17 add TCP Server mode and virtual COM test