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HLK-RM04 Application manual 1


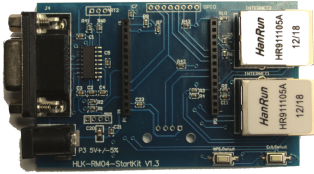



Serial to Ethernet



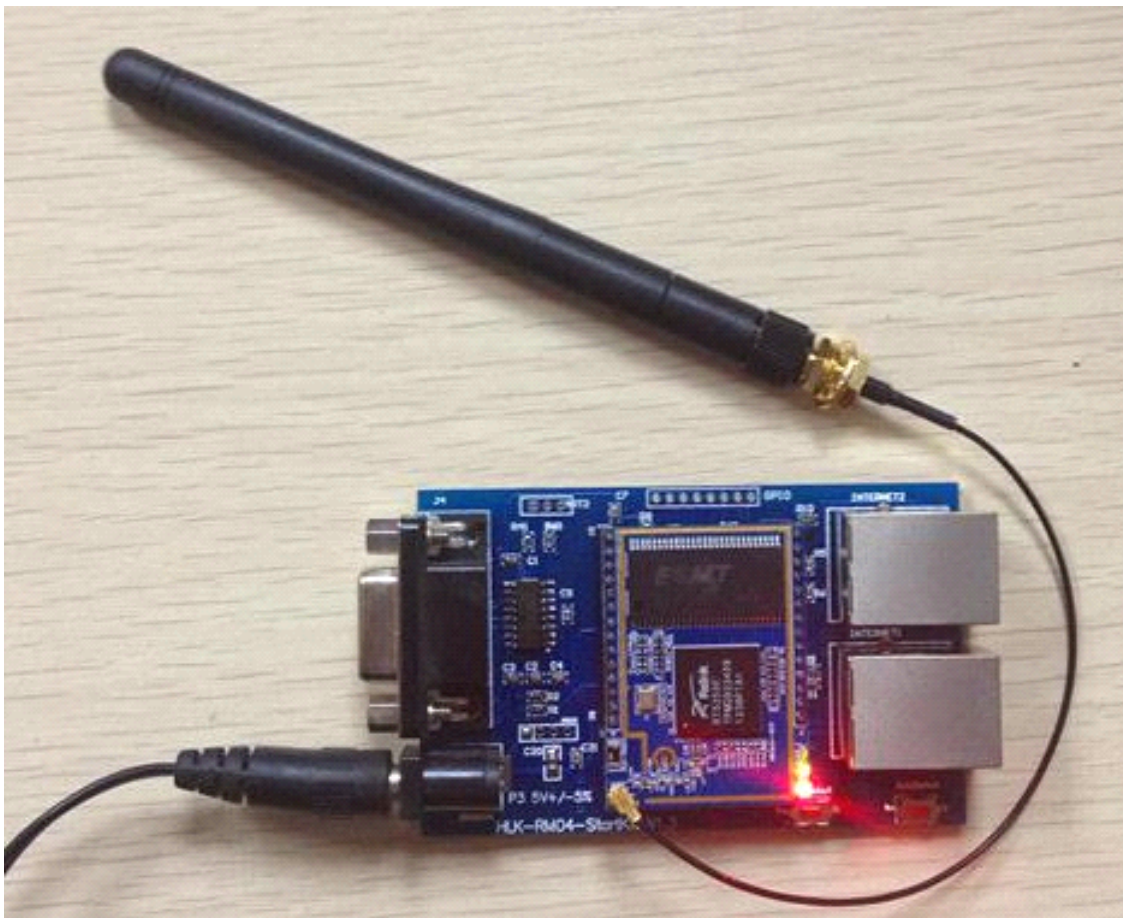
Shenzhen Hi-Link ElectronicTechnology co.,Ltd

Note: To ensure the normal operation, please make sure you have purchased the HLK-RM04 Development Kit from us.as the following picture:

Shenzhen Hi-Link Electronic Co.,Ltd

	HLK-RM04 module
	HLK-RM04 test board
	2.4G rod antenna
	5V 1000mA power supply
	mesh line (optional)

Please contact well as the following way in the picture:



Please note the direction that HLK-RM04 plugged into the backplane!

1 Brief Introduction

HLK-RM04 is a new low-cost embedded UART-ETH-WIFI module (serial port - Ethernet - Wireless network) developed by Shenzhen Hi-Link ElectronicTechnology co., Ltd

This product is an embedded module based on the universal serial interface network standard, built-in TCP / IP protocol stack, enabling the user serial port, Ethernet, wireless network (wifi) interface between the conversions.

Through the HLK-RM04 module, the traditional serial devices do not need to change any configuration; data can be transmitted through the Internet network. Provide a quick solution for the user's serial devices to transfer data via Ethernet.

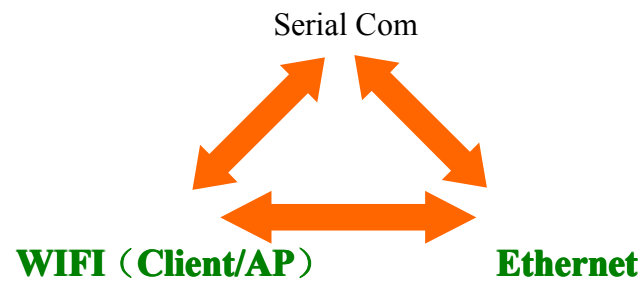
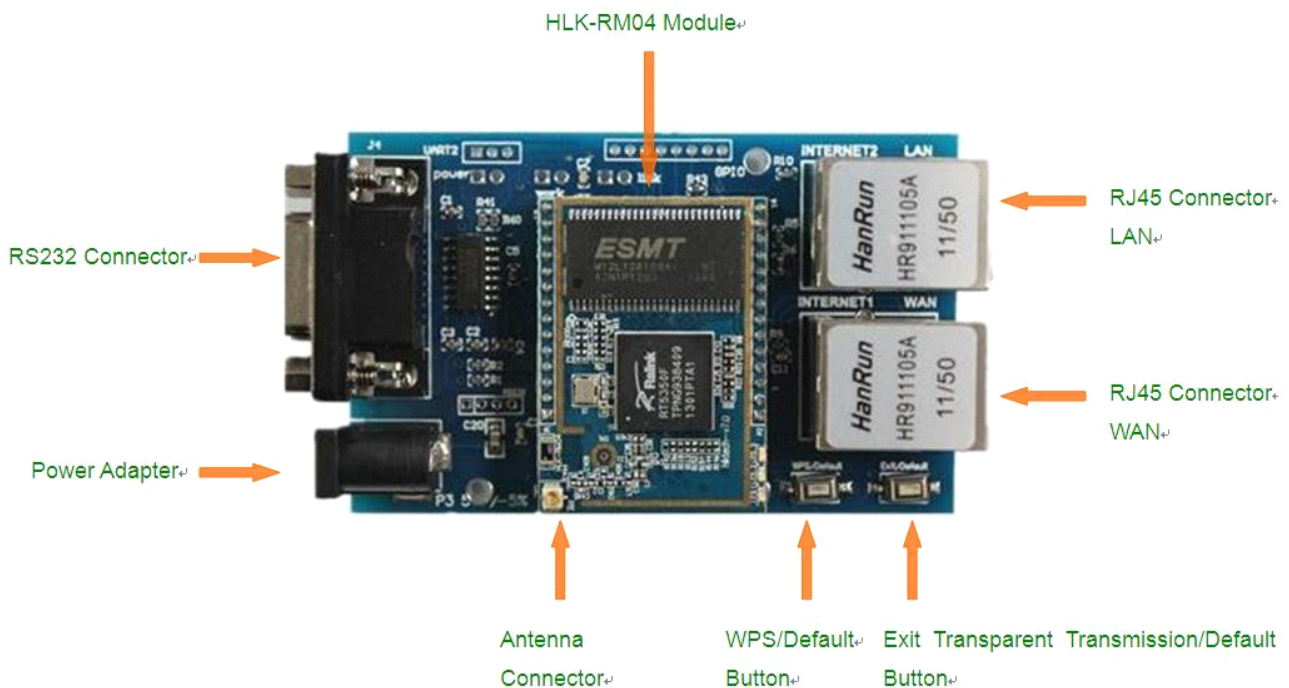


Chart 1. F-structure

Every part's function of Test board:



2. Serial to Ethernet configuration method:

Serial to Ethernet model:

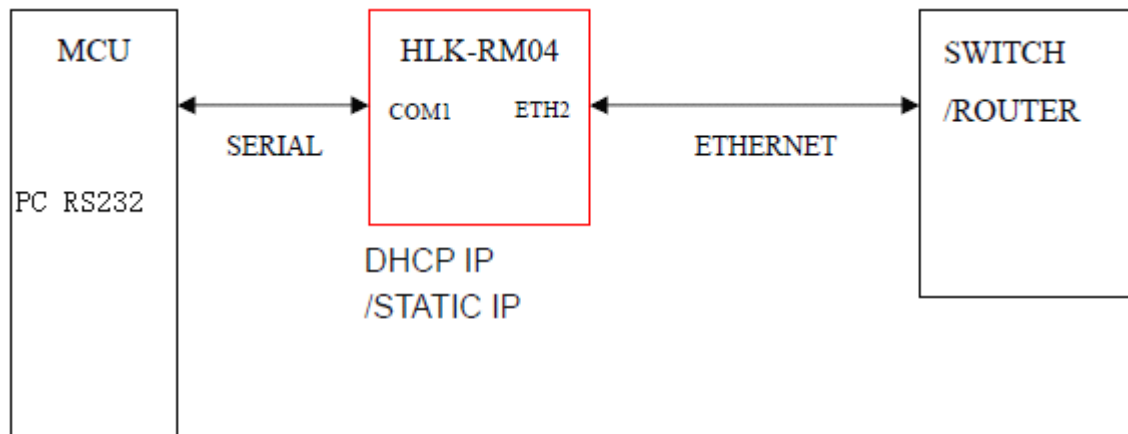
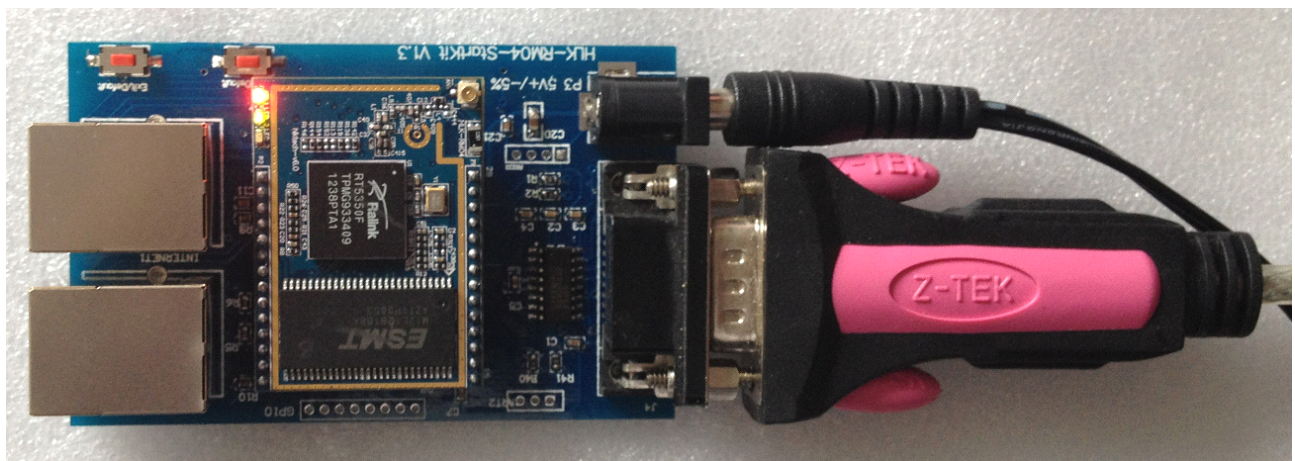


图 3.串口转以太网模型

Method one: Configuration through Serial port

1. Firstly, please ensure that the module is in default mode. The method of restoring the factory settings: power-on the module, wait 35 seconds. Then press one of the buttons on the test board and hold on more than 6 seconds.
2. Power-on the module again, wait 35 seconds until the light on the module blinking, and then connect the DB9 serial port with the computer's serial port in a straight line. Or connect the test board directly with a USB to serial cable as the following picture:



3. Press the "Exit transparent transmission / Preset" button, open the configuration software, select the serial number, click on the search button, If there appears message >: at (: Found Device at COM8 (115200)! In the response area, it means the module is found.

The screenshot shows the HLK-RM04_CONFIG software interface. The title bar reads "HLK-RM04_CONFIG By ShenZhen Hi-Link ElectronicTechnology co.,Ltd". The interface is divided into several sections:

- Command:** A text area containing AT commands:


```
at+netmode=1
at+dhcpc=1
at+remoteip=192.168.11.245
at+remoteport=8080
at+remoteproto=tcp
at+timeout=0
at+mode=server
at+uart=115200,8,n,1
at+uartpacklen=64
at+uartpacktimeout=10
at+net_commit=1
at+reconn=1
```
- Response:** An empty text area for the device's response.
- Operating Mode:** A dropdown menu set to "COM11" and a "Search" button. Below it, "Ser2Eth" is selected under "Operating Mode".
- Network Protocol:** Radio buttons for "TCP Server" (selected), "TCP Client", "UDP Server", and "UDP Client".
- WiFi Parameter:** Fields for "SSID:", "Enc Type:", and "Key:". Above these, "Ser2WiFi" is selected, with "WiFi Client" and "WiFi AP" as options.
- Serial Parameter:** Fields for "Baudrat" (115200), "Data" (8), "Parity" (NONE), and "Stop" (1).
- Remote:** A text field containing "192.168.11.245".
- Port:** A text field containing "8080".
- Local port:** An empty text field.
- Network Parameter:** A section with a checked "DHCP" box and fields for "IP:", "Mask:", "Gatew", and "DNS", each with a dotted input field.
- Saved User Parameter:** A section with buttons for "User0", "User1", "User2", and "User3", each with a "S" button next to it.
- Buttons:** "Commit", "Query Config", "WIFI Scan", "Transparent", and "Reset Default" are located at the bottom right.

4 Parameter configuration

Operating mode: Ser2 Eth(serial to Ethernet)

Network Protocol: TCP server

Remote IP: Remote IP is not working as a sever

Port: The monitoring port of the starting TCP server

Serial Parameter: Change the parameters according to your requirement.

Attention please



DHCP: when the DHCP started, Modules need to obtain an IP from the router, so you should log on the router and find the IP of the module first in order to communicate. At this time, Cable and PC Direct Connect is no way to communicate.

If you do not start DHCP, you need to know the IP address specification of your router and fill in IP address yourself.

For example: Our IP specification is 192.168.11.xxx.; 255.255.255.0; 192.168.11.1

Please set the IP parameters according to your own router. This time, the module can connect to the router through the network cable, can also connected with the computer, If it directly connected with the computer, the computer's IP should manually configured to 192.168.11.xxx; 255.255.255.0

Parameter can be configured as the following picture:

RM04_CONFIG By Shenzhen Hi-Link Electronic Technology co., Ltd

待发送命令

```
at+net_ip=192.168.11.254,255.255.255.0,192.168.11.1
at+net_dns=192.168.11.1,0.0.0.0
at+remotepro=tcp
at+mode=server
at+remoteip=192.168.11.245
at+remoteport=8888
at+timeout=0
at+uart=115200,8,n,1
at+uartpacklen=64
at+uartpacktimeout=10
at+net_commit=1
at+reconn=1
```

命令执行与回复

```
at+net_dns=? 192.168.11.1,8.8.8.8
at+net_wanip=? ,
at+remoteip=? 192.168.11.245
at+remoteport=? 8080
at+remotepro=? tcp
at+timeout=? 0
at+mode=? none
at+uart=? 115200,8,n,1
at+uartpacklen=? 64
at+uartpacktimeout=? 10
at+ver=? V1.39(Dec 4 2012)
```

用户参数保存区

User0	S	User1	S
User2	S	User3	S

COM8 搜索模块

工作模式选择

☒ 串口以太网 ☐ 串口转WIFI

☐ 无线网卡模式 ☐ 无线AP模式

网络协议选择

☒ TCP服务器 ☐ TCP客户端

☐ UDP服务器 ☐ UDP客户端

无线参数

网络名称 Hi-Link_

加密方式 WPA2_AES

密钥 12345678

远端IP 192.168.11.245

端口 8888

串口参数

波特率 115200 数据位 8

校验位 NONE 停止位 1

☐ 启用DHCP

网络参数

本地IP 192 . 168 . 11 . 254

子网掩码 255 . 255 . 255 . 0

网关 192 . 168 . 11 . 1

DNS 192 . 168 . 11 . 1

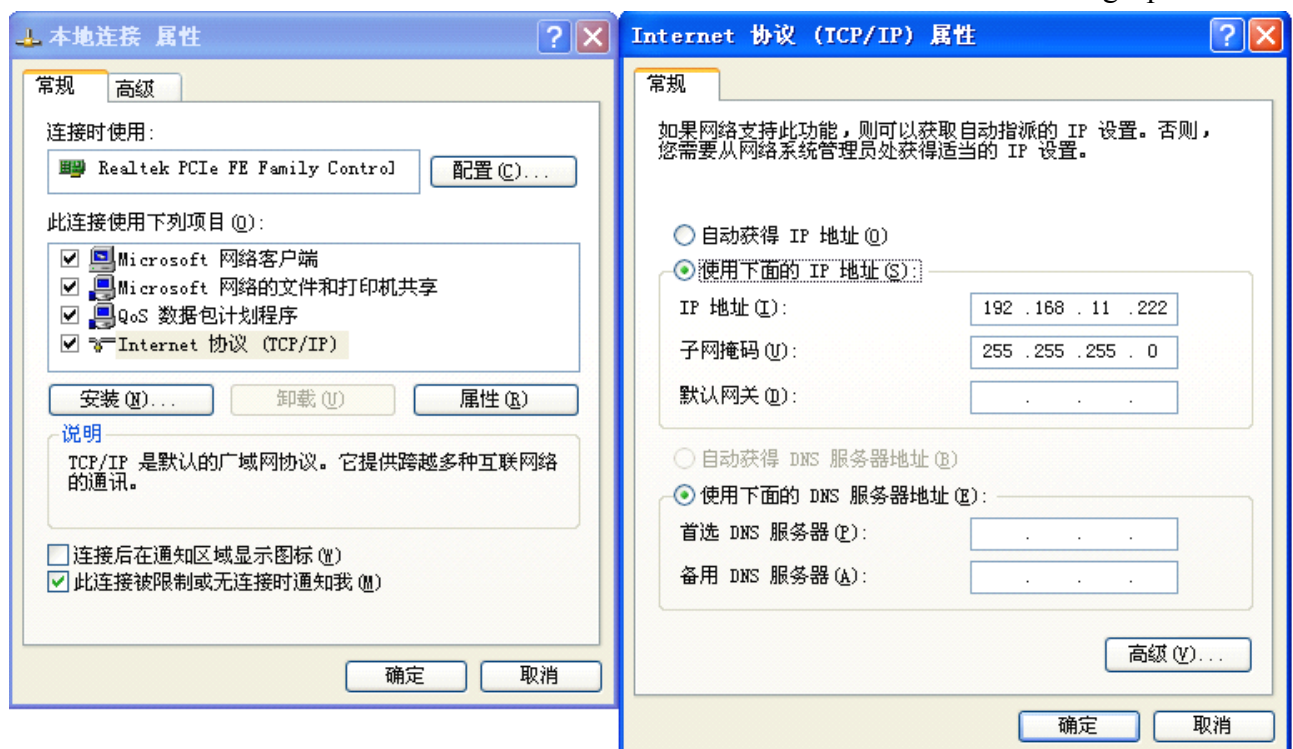
提交配置 查询配置 透传模式 恢复出厂

We demonstrated here is not enabled DHCP, static IP configured.

After committing the configuration, the WIFI of the module will turn off and the LAN port will be shut down

5 TCP to serial data transfer

Submit your parameters, the module will restart, you can also re-power to the module, when the module starts, connect the computer network port and the network port 1 of HLK-RM04 with the network cable. Please close other network card. Configure Fixed IP to the computer that connect to the the HLK-RM04 module as shown in the following picture:



Check if the ping 192.168.11.254 is ok: start ----run----cmd


```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [版本 5.1.2600]
(C) 版权所有 1985-2001 Microsoft Corp.

C:\Documents and Settings\Administrator>ping 192.168.11.254

Pinging 192.168.11.254 with 32 bytes of data:

Reply from 192.168.11.254: bytes=32 time=1ms TTL=64
Reply from 192.168.11.254: bytes=32 time<1ms TTL=64
Reply from 192.168.11.254: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.11.254:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
Control-C
^C
C:\Documents and Settings\Administrator>
  
```

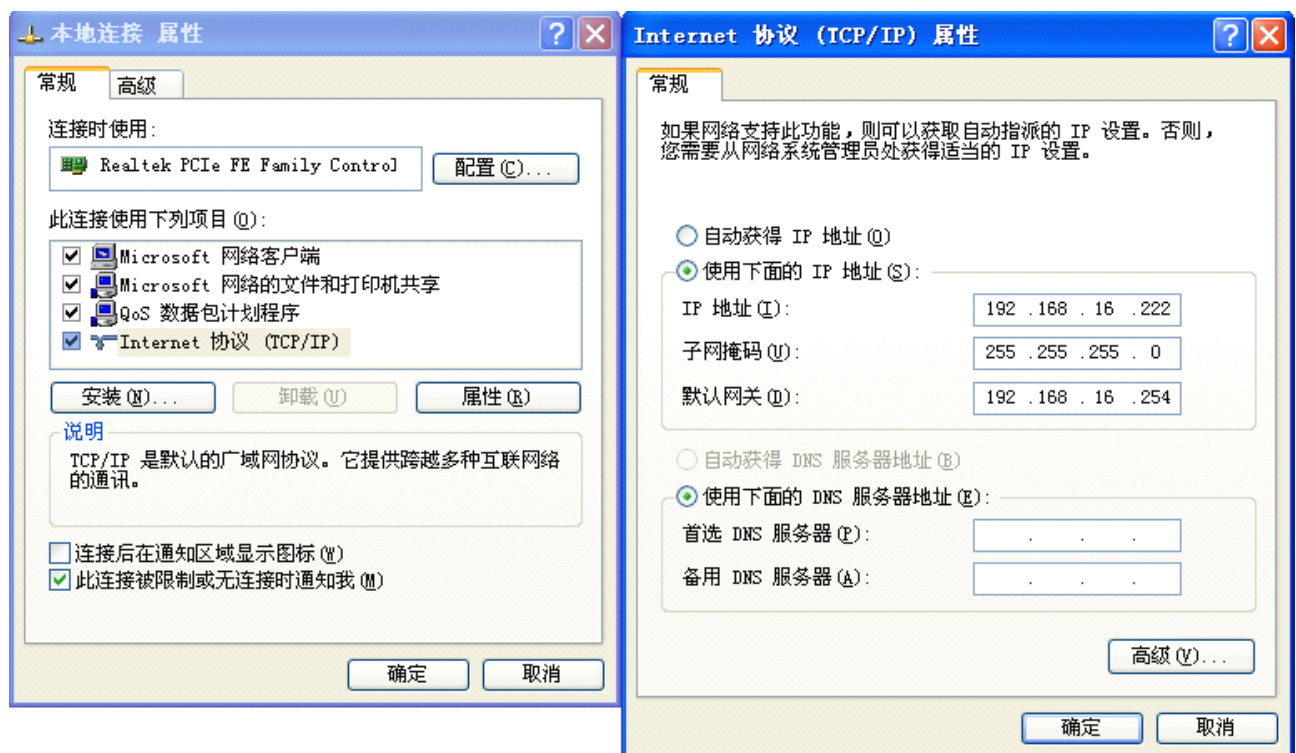
Open the serial debugging tools and network debugging tools, do send data test:



The serial and Ethernet can send data to each other now.

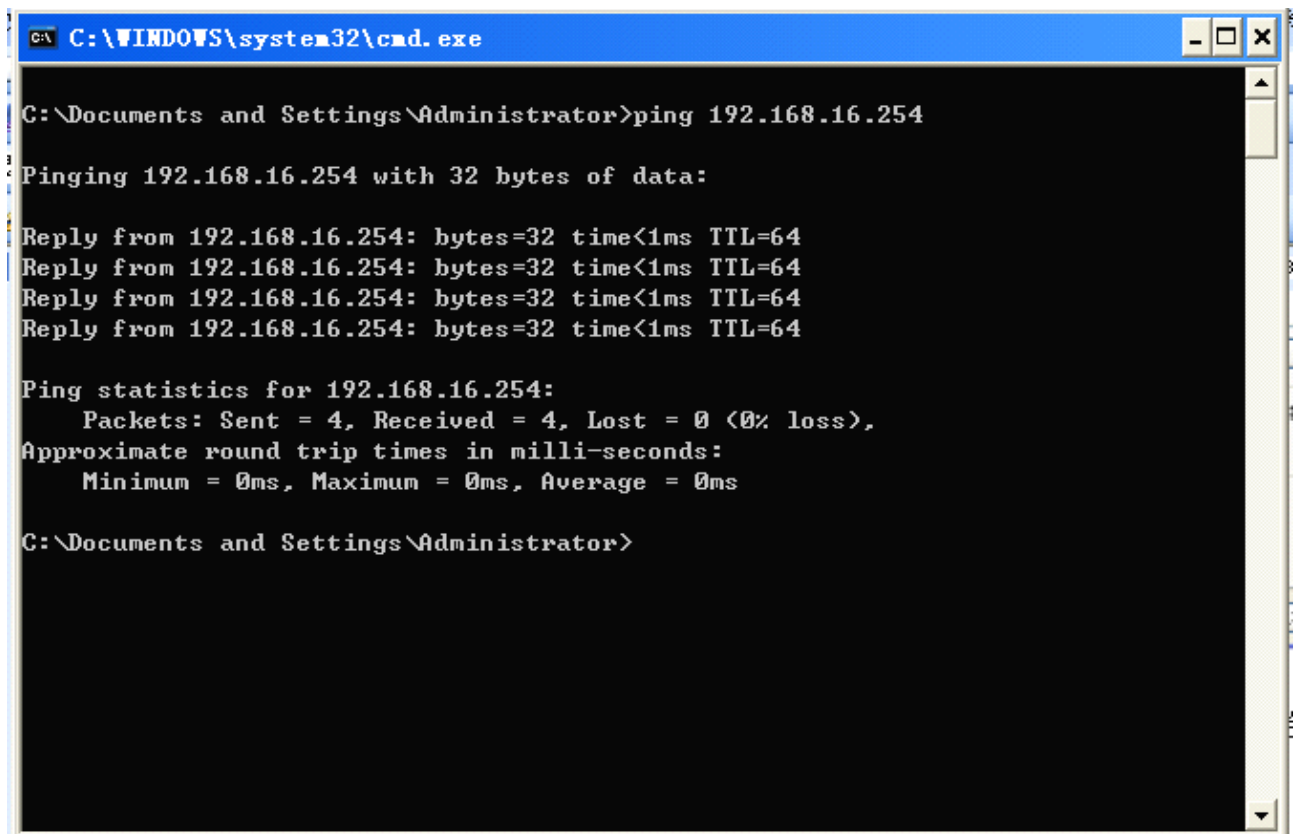
Method two: configuration through network port

1. First restore the factory setting. Then start the module, connect the network port 2 of HLK-RM04 test board and the computer's Network port with network cable .And then set the computer's IPas follows:



Check if ping 192.168.16.254 is all right: start----run----cmd

Note: not 192.168.11.254



```
C:\WINDOWS\system32\cmd.exe

C:\Documents and Settings\Administrator>ping 192.168.16.254

Pinging 192.168.16.254 with 32 bytes of data:

Reply from 192.168.16.254: bytes=32 time<1ms TTL=64
Reply from 192.168.16.254: bytes=32 time<1ms TTL=64
Reply from 192.168.16.254: bytes=32 time<1ms TTL=64
Reply from 192.168.16.254: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.16.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\Administrator>
```

2. Input 192.168.16.254/ser2net.asp in the browser, it will pop-up a dialog box, enter the user name and password. Both of the username and password are admin.

HLK-RM04 Serial2Net Settings

NetMode:

IP Type:

IP Address:

Subnet Mask:

Default Gateway:

Primary DNS Server:

Secondary DNS Server:

	Current	Updated
Serial Configure:	115200,8,n,1	<input type="text" value="115200, 8, n, 1"/>
Serial Framing Lenth:	64	<input type="text" value="64"/>
Serial Framing Timeout:	10 milliseconds	<input type="text" value="10"/> milliseconds (< 256, 0 for no timeout)
Network Mode:	server	<input type="text" value="Server"/>
Remote Server Domain/IP:	192.168.11.245	<input type="text" value="192.168.11.245"/>
Locale/Remote Port Number:	8888	<input type="text" value="8888"/>
Network Protocol:	tcp	<input type="text" value="TCP"/>
Network Timeout:	0 seconds	<input type="text" value="0"/> seconds (< 256, 0 for no timeout)

As Static IP and DHCP, please reference to the method 1. After configuration, click on the button 'Apply' to wait for the module restarting.

3. Waiting for the module to restart, unplug the network cable of the HLK-RM04 network port 2 and plugged it into the Ethernet port 1. Next Steps please reference to fifth step in the method one.