RS232 TO RJ45&WIFI CONVERTSERVER

Hard version：V1.0

File version：V1.0

Content

1. Product Introduce

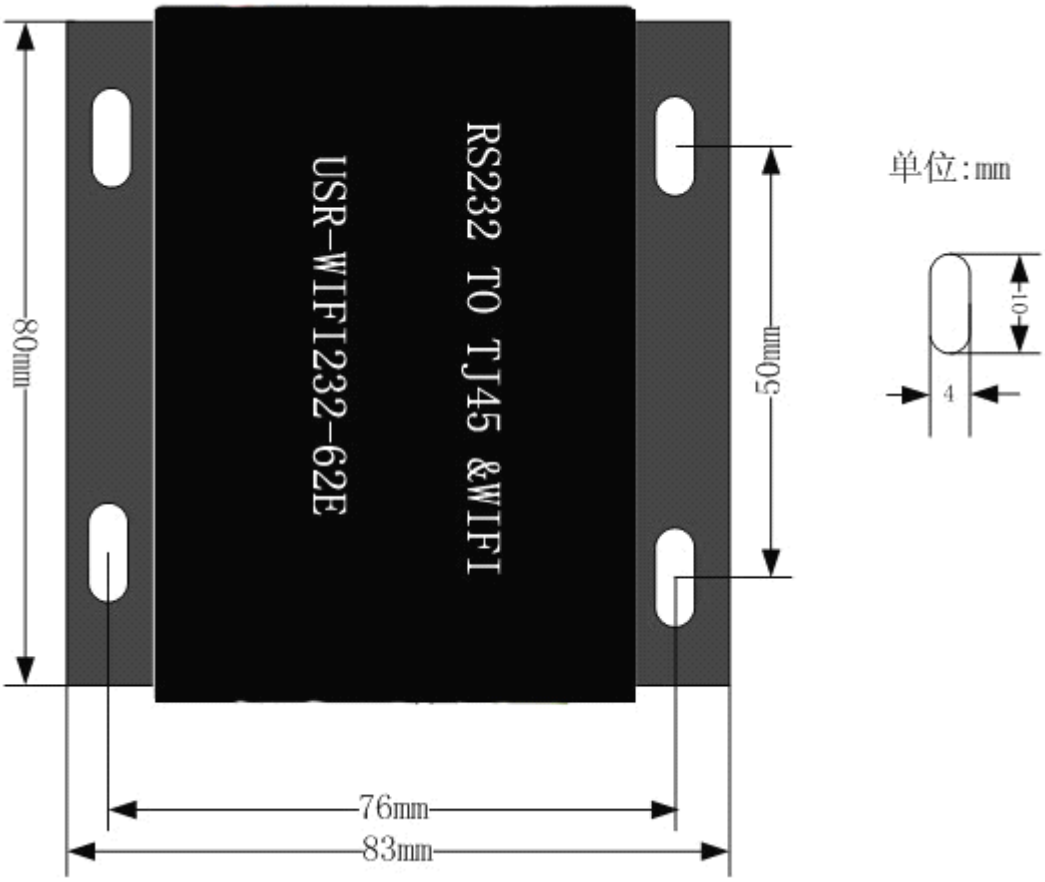
1.1 Function

RS232 to WIFI & RJ45 serial server is a new wireless networking server, which adopts the latest kernel design. Used to convert RS232 serial port equipment/ Ethernet device to WIFI networking. Control by mobile phone or laptops, also can be connected to the remote server.

1.2 Electrical parameter

	Item	Parameter
Wireless parameter	Certification	FCC/CE
	Wireless standard	802.11 b/g/n
	Frequency range	2.412GHz-2.484GHz
	Transmit power	802.11b: +20dBm(Max.)
		802.11g: +18dBm(Max.)
		802.11n: +15dBm(Max.)
		configurable
	Receiver Sensitivity	802.11b: -89dBm
		802.11g: -81dBm
		802.11n: -71dBm
	Antenna Option	External：I-PEX Connector
Hardware Parameters	Data Interface	UART：1200bps - 230400bps
		Ethernet：100Mpbs
		GPIOs
	Operating voltage	5-18V (+/-5%)
	Operating current	170mA~300mA
	Operating temperature	-25℃- 85℃
	Storage temperature	-40℃- 125℃
	Dimensions	83×80×25mm
Software parameters	Network type	Station/AP mode
	Security mechanisms	WEP/WPA-PSK/WPA2-PSK/WAPI
	Encryption	WEP64/WEP128/TKIP/AES
	Work mode	Transparent Transmission and Agreement Transmission mode
	Serial command	AT+instruction set
	Network Protocol	TCP/UDP/ARP/ICMP/DHCP/DNS/HTTP
	Max. TCP Connection	32
	User Configuration	Web Server＋AT command config
	User Application SW	Support customized application software

1.3 Dimensions and installation diagram



2. Application Domain

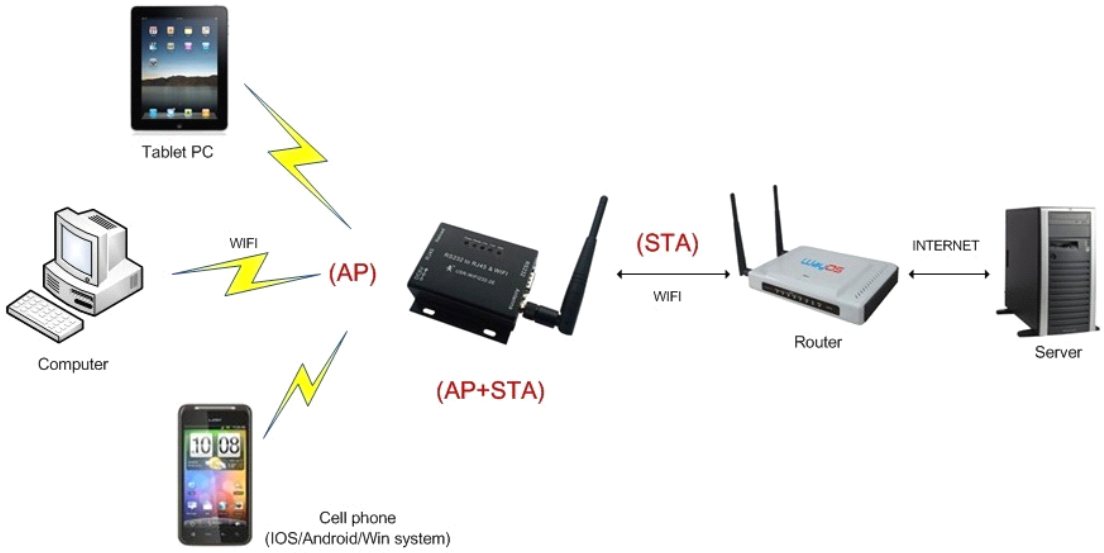
2.1 Application of AP

As shown in Figure, USR-WIFI232-62E used as AP. Other modules and computers can be used as a STA to connect to this module. Also, it can connect to users equipment through UART or GPIO.

2.2 Application of STA

USR-WIFI232-62E as STA(use the AP CLI interface), connect to other AP, to compose a wireless network. All of the STA take AP as the wireless network center, and the mutual communication between STA is through AP forwarding.

2.3 Application of AP+STA



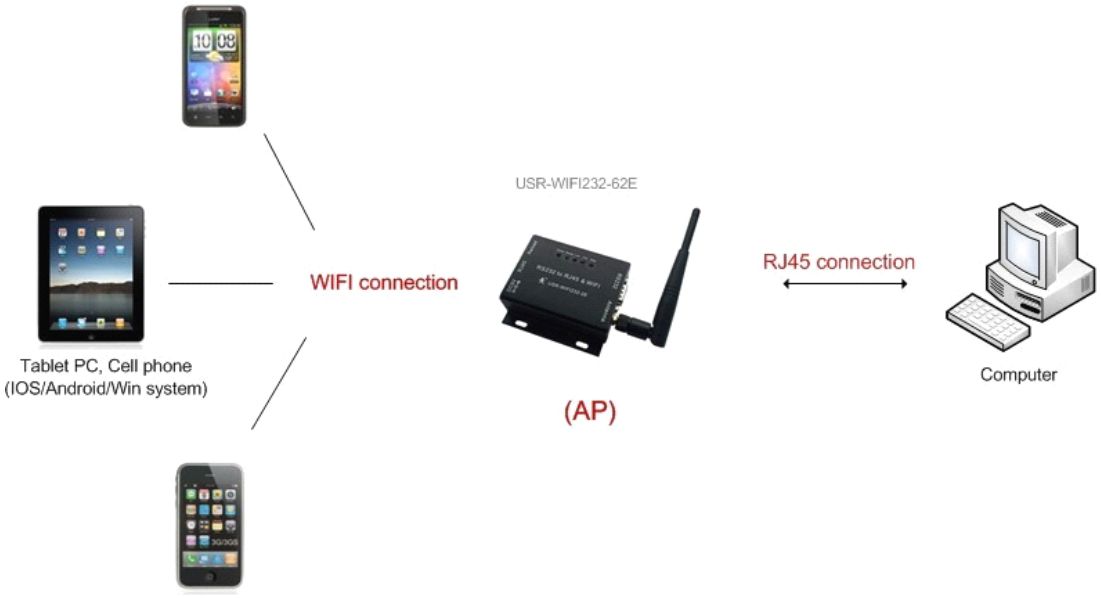
USR-WIFI232-62E can support AP+STA mode. That is the module support a AP interface and a STA interface at the same time.

AP+STA function settings:

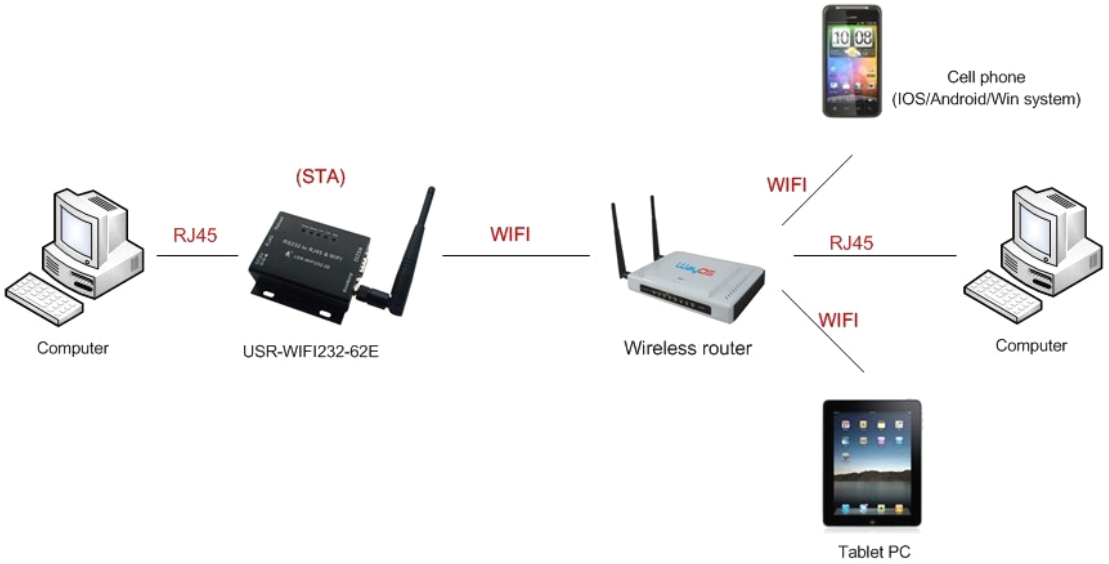
AP+STA function need to set through serial command.

- AT+FAPSTA=on set AP+STA function
- Then set module to STA mode, the AP interface still valid

2.4 Wired and wireless Application drawing

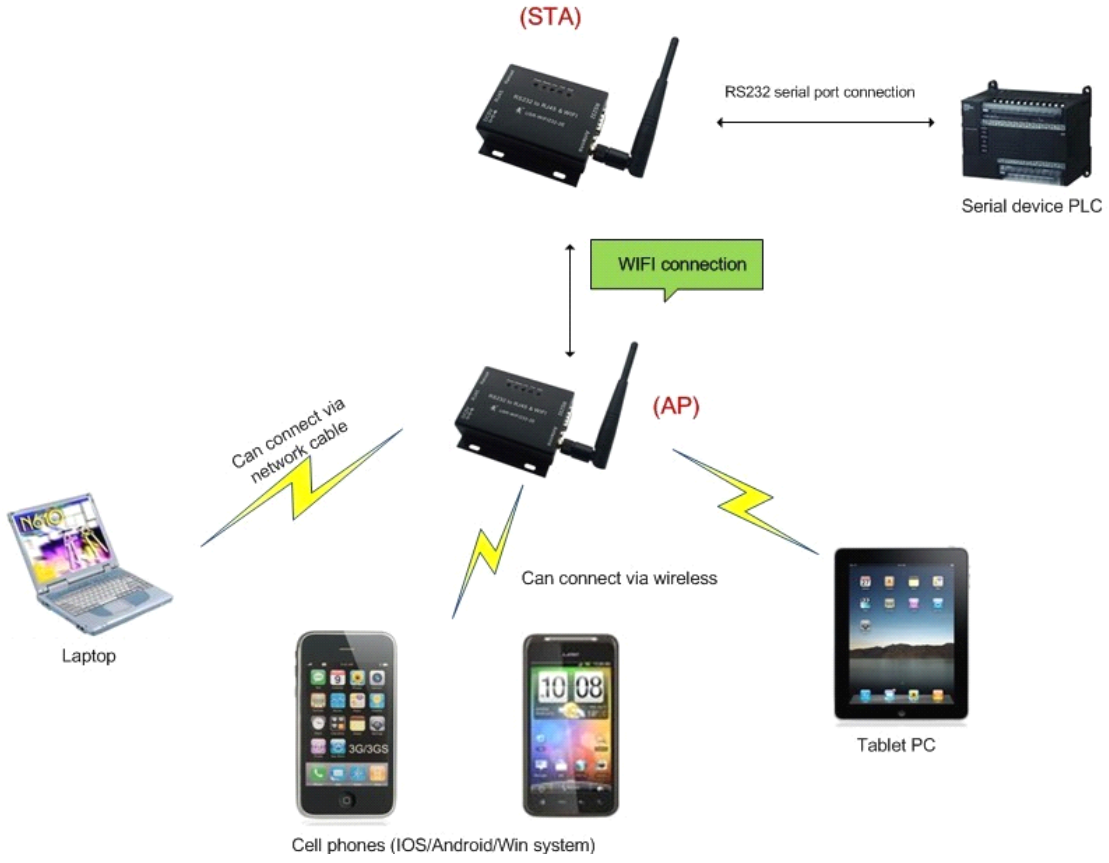


When USR-WIFI232-62E used as AP, other computers and equipments can be used as STA connected to this device through RJ45(network cable).



When USR-WIFI232-62E used as STA, network port connected to computer via RJ45, wireless added to wireless router to networking.

2.5 Application of wireless serial port(one AP, one STA)



USR-WIFI232-62E module can be set as STA or AP. So the device logically supports two wireless interfaces, one as STA, another interface is equivalent to a AP, other STAs can connect to wireless network via the module AP interface.

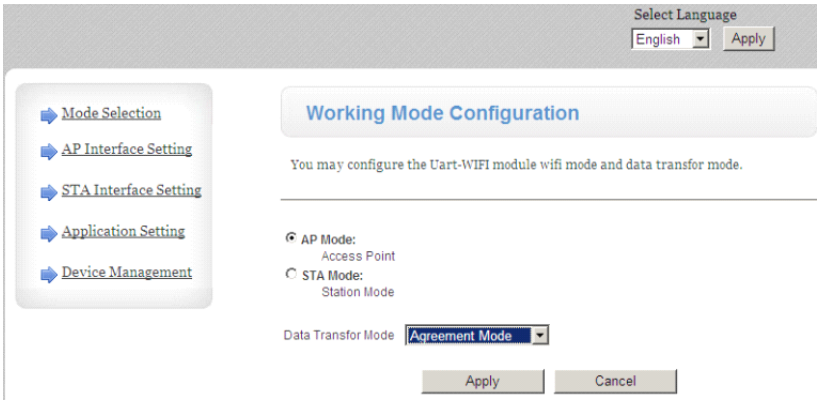
3. Function Specifications and Test

3.1 Module setting

USR-WIFI232-62E internal complete protocol conversion, customers does not need to care about the details. The serial port side serial data transparent transmission, WIFI network side is TCP/IP packet, specify the working details through simple settings. Can be set by module built-in webpage, by serial port using AT command and by our software in CD. Once set up permanent preservation.
(Serial port configurate, webpage configurate and AT commands configurate process, please reference to quick start file)

3.2 Serial to WIFI transparent transmission

USR-WIFI232-62E support serial port transparent transmission mode, can realize RS232 serial plug and play, to minimize the complexity of using. In this mode, all data that need transmit and receive are transparent transmission between serial interface and WIFI, don't make any resolution.



In transparent transmission mode, can be completely compatible with users original software platform. The user equipment do not need to have basic software change, to realize the

wireless data transmission.

<Reminding:>
Transparent transmission mode as a lower level data transmission, itself can not guarantee zero error rate in data transmission. The users can adopt higher level TCP protocol handshake or open the serial port hardware flow control function(RTS/CTS), this will reduce the error rate to the lowest. If the users does not need serial port hardware flow control function, just put the corresponding pin feet(CTS/RTS) vacant.

3.3 Serial to Ethernet transparent transmission

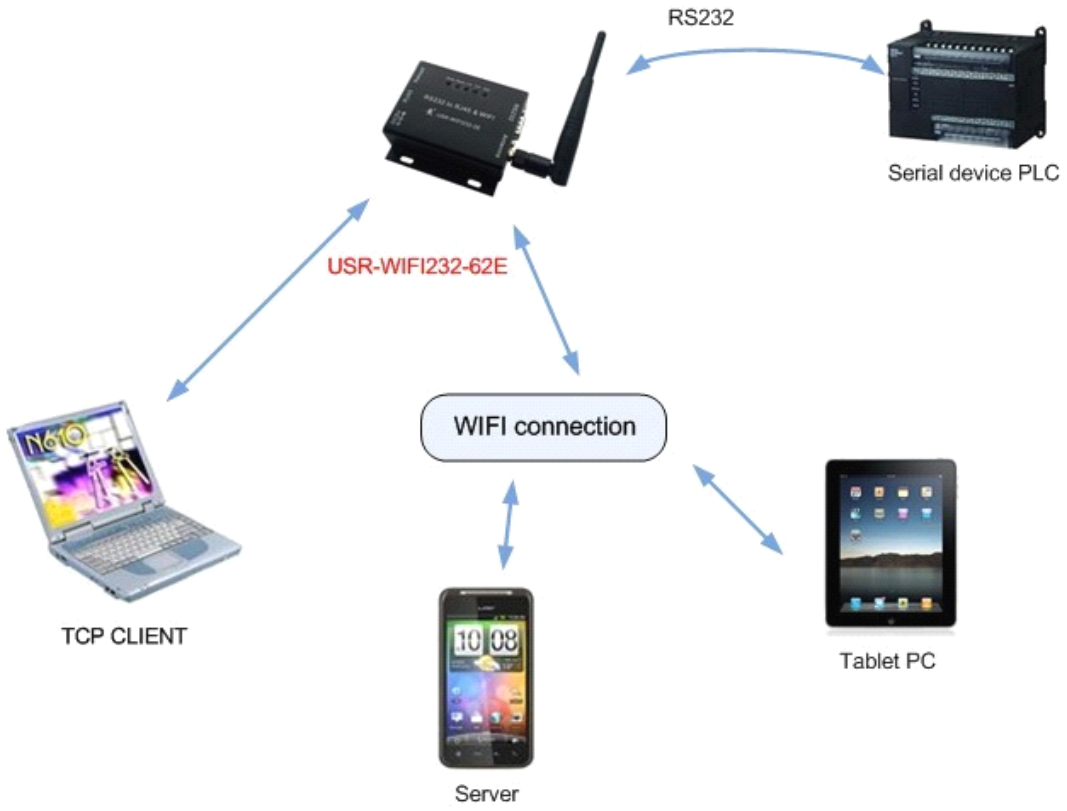
USR-WIFI232-62E device provides a 100M Ethernet interface, through which customers can realize WIFI port, Serial port and Ethernet port these three ports interworking. In building network aspect, The USR-WIFI232-62E support bridging mode and routing mode to deal with different specific applications.

<Reminding:>
For different networking mode, USR-WIFI232-62E require commands to switch version(as description of N-Ver and Z-Ver below). Use command AT+FVER=n to switch to N-Ver, AT+FVER=z to switch to Z-Ver, When batches, can be set to different factory values according to customer requirement.
(please reference to USR-WIFI232-X-4.0 2.6 chapter)

3.4 Ethernet to WIFI transparent transmission

For these embedded system equipments that without operating system or no USB port to extend WIFI card, you can use the module Ethernet to WIFI transparent transmission function. So with strong signal, this module can also work in the distance that general USB network card can not competent. Even can make half cable network and half wireless for longer distance. (Please reference to Ethernet to WIFI transparent transmission documents)

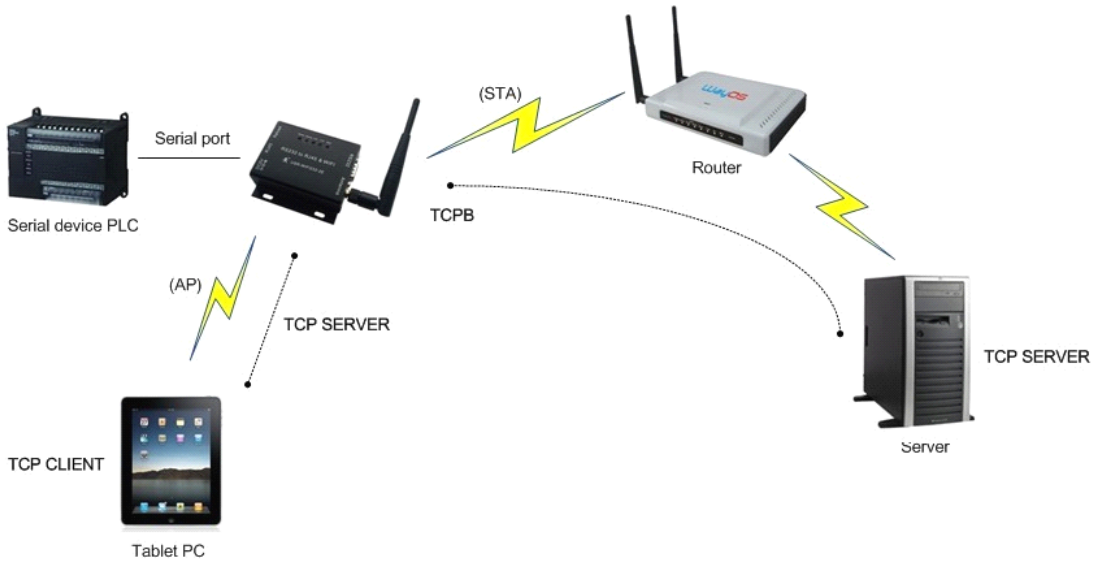
3.5 Wired network+WIFI to serial



USR-WIFI232-62E support serial to Ethernet and serial to WIFI communication at the same time. As shown in picture, USR-WIFI232-62E set as TCP Server, support Ethernet and WIFI communicate with module at the same time. If module as TCP Client, serial port will access to TCP Server to communicate automatically.

3.6 AP+STA Instruction

USR-WIFI232-62E can support the AP+STA mode. That is the module support a AP interface and a STA interface meanwhile, as shown below:



In the picture, USR-WIFI232-62E use the AP+STA function, module STA interface can be connected to router, and network server through TCP connection. At the same time, the module AP interface is also available, cellphone/PAD ect can connect to AP interface(through TCPB connection) to control serial equipment or set the module.

- With AP+STA function, can easily use hand equipment such as cellphone or PAD to monitor user equipment, without changing the original network settings.
- With AP+STA function, can easily set the module, solving the problem of module can only through serial port settings as STA in the past.

AP+STA function settings:

The AP+STA function need to be set by serial command.

- AT+FAPSTA=on set AP+STA function.
- Then set module as STA mode, AP interface is still valid.

4. Hardware Description

4.1 Power Interface

This device adopts standard power outlet, external diameter 5.5mm, internal diameter 2.1mm, inner + outside -, input voltage range 5V, current 350MA, we default supply 5V/1A power adapter.

4.2 Indicator light

Five lights in total. From left to right:

ID	NAME	DESCRIPTION
1	Power	Light when power on
2	Ready	Light when start on
3	Link	Light when link
4	TXD	Light when send data
5	RXD	Light when receive data

4.3 RS232 Interface

The set serial port is male(pins), RS232 level(can directly connect computer), pin sequence keeps consistent with computer COM port , when connect with computer, need use cross line (2-3 cross, 7-8 cross, 5-5 straight, 7-8 can do not connect but must not connect to computer directly, otherwise may cause module doesn't work properly), 6 lines have definition, the rest vacant.

ID	NAME	DESCRIPTION
2	RXD	Data receive pin
3	TXD	Data send pin
5	GND	Ground
7	RTS	Require to send
6	CTS	Clear to send
9	VCC	Default not use, a pad jumper om PCB. When needed, can connect to equipment power input positive, used to power on serial or external power supply equipment through the serial cable.

4.4 RJ45 Network Interface

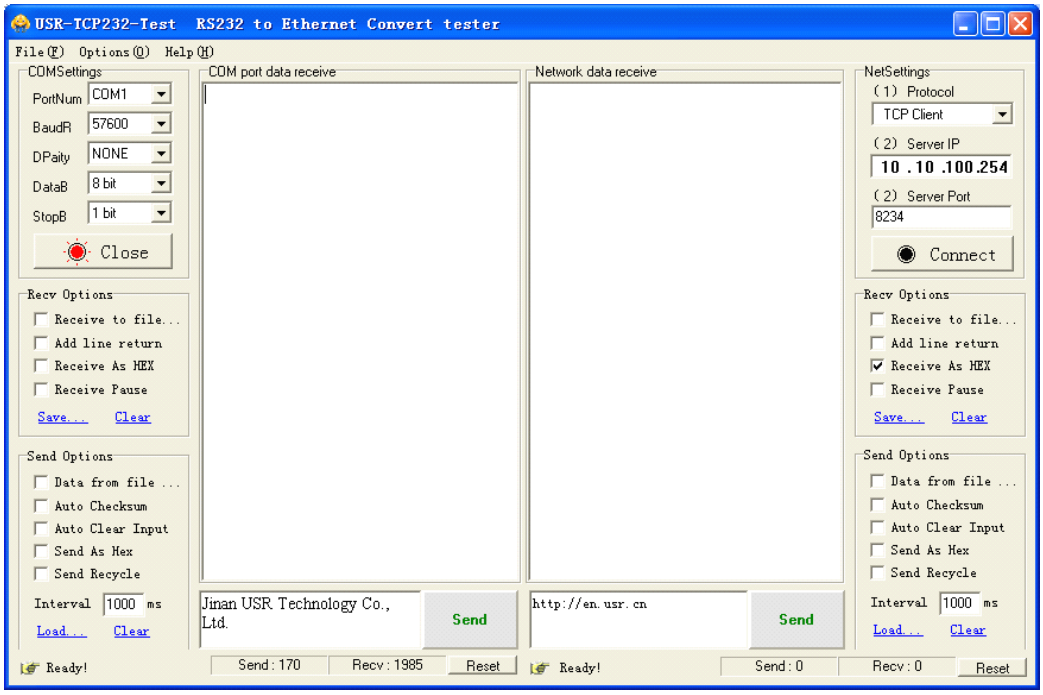
Network port connection. The module network port is 100M self-adaption, support AUTO MDI/MDIX, can connected to crossover cable or parallel cable. That is to say, you can use network cable to computer directly or test.

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

5. Program Resources

We provide computer and Android software free for customers, as well as the PC programming code. ISO version USR-TCP232-Test and Server data forwarding platform is developing.

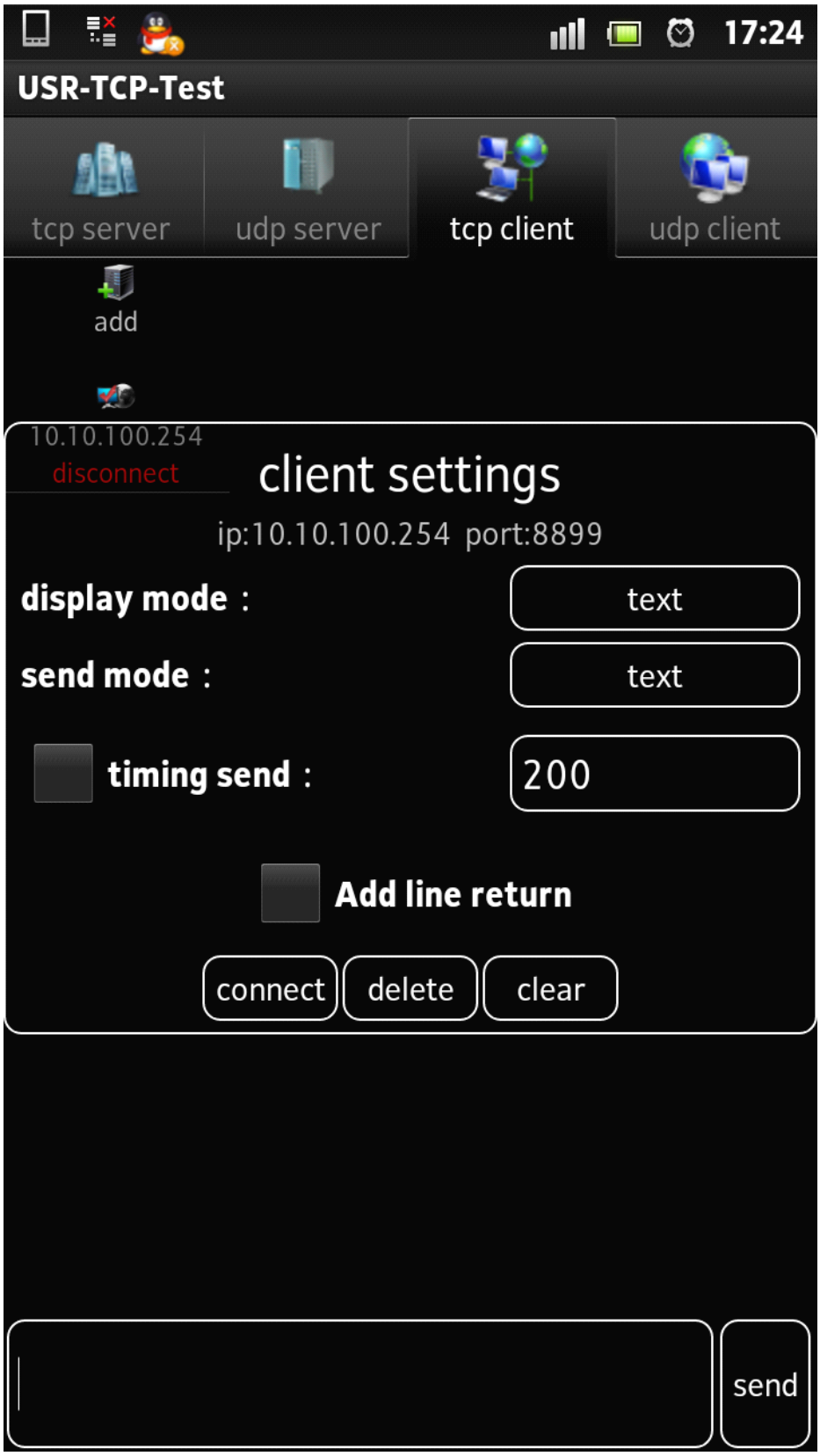
5.1 Computer USR-TCP232-Test



USR-TCP232-Test.exe is developed by Jinan USR IOT Technology Co., Ltd, the serial port and network commissioning test software combo.

To test the serial port to the RJ45/WIFI network communication, we connect USR-WIFI232-62E RS232 port to computer, RJ45/WIFI network port also connected with computer network(reference to USR-WIFI232-X.-4.0 3.2 chapter)

5.2 Android USR-TCP232-Test



Android network test assistant(TCPIP UDP test). This is a tool that cellphone or tablet debugging for TCPIP, Configure WIFI to serial port mode, it can realize the cellphone debugging serial communication.

This software support TCP Server, TCP Client, UDP Server, UDP Client mode, support English automatic switching.

This program developed by Jinan USR IOT Technology Co., Ltd, just for customers free test usage, please do not directly used for commercial purposes.

5.3 Socket programming test(VB Dephi Poland c++)

Remark: OEM and ODM accepted

6. Contact us

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