

USR-WIFI232-X quick start guide

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WIFI232 series product is used for convert data from RS232 to WIFI TCPIP, Two-way transparent transmission, user need not know the WIFI and TCPIP detail, update the product for WIFI control. All the convert work is done by the module, for users, the RS232 side is only as a serial device, at the WIFI side, for user is TCPIP Socket data. User can setup the work detail by sample settings, setup via inside web pages or RS232 port, the setup work need only do once, then it will save the setting forever.



This doc is for USR-WIFI232-X series products, hardware name HF-A11x, as a quick user guide, we try our best to let the doc short, suggest users follow the guide to test module at first. For more detail, please look at the data sheet and applications.



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1. Module Test

1.1 Hard ware connect

In order to test WIFI module, we connect module RS232 to PC and also WIFI to PC.

Most PC has RS232 COM port but no WIFI while most Notebook has WIFI but no RS232 COM port. In order to has both of RS232 port and WIFI network, You may use PC add USB WIFI network Card or Notebook add USB to RS232 cable. But notice, Do use High quality USB to RS232 convert module (We suggest cables make by FT232 chip only).



USR-WIFI232-A and USR-WIFI232-B WIFI core module RS232 is 3.3V TTL lever, can not connect to PC directly, For user test, we supply some mother module, now we USR-WIFI232-2 as sample.

After hardware connect, Power on module, wait about 20 seconds (LINUX system start up), while Ready led light, it means system is ready for use, go to next step.

Notice: The cable link to PC must across the RXD and TXD(PIN2 and PIN3), and across RTS CTS(PIN7 PIN8) or not connect. We supply this special RS232 serial cable.

1.2 Network connection

Notebook enable WIFI, or PC with USB WIFI Network Card and install Drive, you may see the WIFI icon 📴 . Search Network, find SSID named HF-A11x_AP, as follow picture.



| (中) 无线网络连接 | | | × |
|-------------------|---|-------|---|
| 网络任务 | 选择无线网络 | | |
| 💋 刷新网络列表 | 单击以下列表中的项目以连接到区域内的无线网络或获得更多信息(@)。 | | |
| 3 为家庭或小型办公室设置于继网络 | ((Q)) HF-A11x_AP | 手动 ☆ | ^ |
| E. JUSKIPISH | 未设置安全机制的无线网络 | ull | |
| 相关任务 | ((p)) [*] | -00 | |
| ③ 了解无线网络 | ➡ 未设置安全机制的无线网络 ■ 0 | BUUU | |
| 👷 更改首选网络的顺序 | ((P)) 未设置安全机制的无线网络 | | = |
| 🎐 更改高级设置 | ((@)) CECC | | |
| | ↓ 未设置安全机制的无线网络 | | |
| | ((Q)) CICC-AUTO | | |
| | I 6用安全的无线网络 (WPA2) | 000 | |
| | vifimodII0192.168.1.254 | 大宗要 🥎 | ~ |
| | | | |

Join this network, choose auto get IP Address, WIFI module has DHCP Server function and is on by default, it will allocate an IP to PC.

| | (党和) 支持 | |
|------------------------|--|--|
| | 170 March 19 | |
| 已连接上 HF-A11x_AP | ·连接状态 ···································· | 通过 DHCP 指派 |
| 00:15:24 150.0 Mbps | 子网推码: 武认网关: | 255. 255. 255. 0 10. 10. 100. 254 |
| (1) 收到 | Windows 没有检测到此连接的问题。如 您无法连接,请单击"修复"。 | 四果 修复(2) |
| 23 | | |
| 查看无线网络(火) | | 「美岡の」 |
| | □.注意工 HT-A11x_AP 00:15:24 150.0 Mbps | LAE技工 HT-Allx_AP O0:15:24 150.0 Mbps ill · (*) · (*) 查看无线网络 (!) 关闭 (2) · (*) 王 地址: 子 网掩码: 默认网关: 详细信息 (2) Yindows 没有检测到此连接的问题。如 您无法连接,请单击"修复"。 |

Now the Link Led should light, means link connected.



1.3 Send and Receive test

COM Settings area (left): Open the test software **USR-TCP232-Test.exe**, Choose COM port witch has connect the module, there is **COM3**, choose band rate to **57600**, this is the default band rate of WIFI module, Click **Open** COM port.

Net Settings area (right): choose **TCP client** mode,Server IP write **10.10.100.254**, it is the WIFI default IP address, Server port to **8899**, It is the default Port the WIFI module listen, Click **Connect** to link to the module.



Now, you can test send data between RS232 and WIFI, COM port to WIFI: PC COM port -> Module COM Port -> Module WIFI -> PC WIFI, WIFI to COM port: PC WIFI -> Module WIFI -> Module RS232 -> PC RS232.



| 😔 USR-TCP232-Test | RS232 to Ethernet Convert test | er | |
|---|--|--|--|
| File (P) Options (Q) Hel COMSettings PortNum COM3 BaudR 57600 DPaity NONE DataB 8 bit StopB 1 bit Close Recev Options Receive to file Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 100 ms Load Clear | p (f) COM port data receive http://en.usr.cn http://en.usr.cn | Network data receive [Receive from 10. 10. 100. 254 : 8899] : Jinan USR Technology Co., Ltd. Jinan USR Technology Co., Ltd. LocalHost 10. 10. 100. 123 Port 176 http://en.usr.cn Send | NetSettings (1) Protocol TCP Clent (2) Server IP 10.10.100.254 (2) Server Pot 8839 ©: Disconnect Receive Pause Receive to file Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 100 ms Load Clear |
| 🍯 Ready! | Send: 60 Recv: 48 Reset | 💓 Ready! Send:48 | Recv: 60 Reset |

When you send data, you can see the TXDand RXD Led flash when data through.

1.4 Android mobile commulication with COM port

Not only the test tool on PC, we supply a TCP Test tool for Android system, you can find the APK install file in CD or download by scanning the follow Two-dimensional code.





Keep the test software USR-TCP232-Test still on.

Open mobile WIFI, find HF-A11X-AP and join the WIFI network as upon right picture.





Open USR-TCP-Test software on mobile **Test**, change to TCP Client view, click Add, create a TCP Connection to 10.10.100.254 port 8899, after create success, it will auto connect.

| E 🧑 | | <u></u> | 23:48 |
|-------------|------------|------------|------------|
| USR-TCP-Te | st | _ | |
| tcp server | udp server | tcp client | udp client |
| add | - | _ | |
| | | | |
| | add c | onnect | |
| IP : 10.10 | .100.254 | | |
| port : (889 | 9 | | |
| a | dd | clo | ose |
| | | | |

After connect created, now you can send data from mobile to PC COM port, and when send data from PC COM port, both of WIFI on mobile and PC can receive data.



| 🔗 USR-TCP232-Test | RS232 to Ethernet | | | ار ک | 23:52 |
|---|--|--|--|--|--|
| R:1.(R) 0-4:(0) V-1- | (11) | USR-TCP-Tes | it | | |
| File (F) Options (Q) Help COMSettings PortNum COM3 BaudR 57600 | COM port data receive http://en.usr.cn http://en.usr.cn http://en.usr.cn | tcp server | udp server | tcp client | udp client |
| DPaity NONE DataB 8 bit StopB 1 bit | http://en.usr.cn http://en.usr.cn http://en.usr.cn send from android send from android | add 🐋 10.10.100.254 port:8899 | Technology Technology Technology Technology Technology Technology | logy Co., Ltd.Jinan U: Co., Ltd.Jinan U: Co., Ltd.Jinan U: Co., Ltd.Jinan U: Co., Ltd.Jinan U: Co., Ltd.Jinan U: Co., Ltd.Jinan U: | an USR SR SR SR SR SR SR |
| Recv Options | | | Technology Technology Technology Technology Technology | Co., Ltd.Jinan U: Co., Ltd.Jinan U: Co., Ltd.Jinan U: Co., Ltd.Jinan U: Co., Ltd.Jinan U: | SR SR SR SR SR |
| Add line return Receive As HEX Receive Pause | | | Technology Technology Technology | Co., Ltd.Jinan U Co., Ltd.Jinan U Co., Ltd.Jinan U Co., Ltd. | SR SR SR |
| Send Options Data from file Auto Checksum | | | | | |
| │ Auto Clear Input │ Send As Hex │ Send Recycle | | <u> </u> | | | |
| Interval 100 ms | Jinan USR Technology (| send from | android | | send |

This test show the function for module works as AP can allow more than one Station for join, it support up to 32 Stations, and work as TCP Server, it support up to 32 TCP Clients.



, then

run

2. Module setup

Now, you can close the upon test softwares, the follow setup method, you can just use one of them.

2.1 Set up via Web pages

Keep WIFI network connection, login web page <u>http://10.10.100.254</u>, the user name and password are both admin.



2.2 Setup via COM port software

Connect the module COM port to PC COM port, install the software runtime lib, **A11_Config_serial_en.exe**, click **Connect**, after success, click **Read**, then you can setup the settings.

| #F-All Configure Tool V | 2.2 | |
|--|--|-------------------------------|
| ☆☆☆ 済南有人物联网技术 Jinan USR IOT Co., Ltd | 「限公司 USR-WIFI2 | 32-Setup |
| PC COM Setting | Module Management Application Setting AP M | Mode Setting STA Mode Setting |
| Device COM3 | WIFI Mode | Web Login- |
| Baudrate 57600 | ● AP mode | User admin |
| Parity None | O STA mode | Password admin |
| Stop Bits 1 | -Work Mode | Module Management |
| Disconnect | Transparent Mode | Module MID |
| | Agreement Mode | |
| Configure Management | <u> </u> | Reboot Reload |
| Read Save CMD | HF-A11 | |
| | Version: 3.28.17-1 | |
| CMD File set_file.txt | | |
| Auto Config after Connectin | 5 | Confirm Cancel |
| Config By File | | |
| | | |



2.3 Setup via WIFI Software

Only firmware after than 3.29.xx has this function, You can find your firmware version in the web pages, use WIFI network to setup the module, you still need to install the **gtk2-runtime.exe**, Open WIFI network card and Forbidden RJ45 network card, setup PC IP address to 10.10.100.123.

| Internet 协议 (ICP/IP) 属性 | ± ? 🔀 |
|--------------------------------------|------------------------------|
| 常规 | |
| 如果网络支持此功能,则可以获取8 您需要从网络系统管理员处获得适当 | 自动指派的 IP 设置。否则, 当的 IP 设置。 |
| ○ 自动获得 IP 地址 (0) | |
| ──⊙ 使用下面的 IP 地址(S): ─── | |
| IP 地址(I): | 10 . 10 . 100 . 123 |
| 子网掩码(U): | 255 . 0 . 0 . 0 |
| 默认网关 (2): | 10 . 10 . 100 . 254 |
| ○ 自动获得 DNS 服务器地址 (B) | |
| ● 使用下面的 DWS 服务器地址 () | <u>3</u>): |
| 自选 UNS 服务器 UT: | |
| 备用 DNS 服务器(A): | |
| | 高级 (火) |
| | 确定 取消 |

Run A11_Config_net_en.exe

| HF-All Configure Tool V | 2. 2 | |
|--|---------------------------------------|----------------------------------|
| ☆ 济南有人物联网技术 Jinan USR IOT Co., Ltd | 「限公司 USR-WIF | I232-Setup |
| Network Connect | Module Management Application Setting | AP Mode Setting STA Mode Setting |
| First set your PC IP address Statically: | WIFI Mode- | [Web Login- |
| 10. 10. 100. 123/255. 255. 255.0 | AP mode | User |
| Next to restart this program! | 🔿 STA mode | Password |
| And then to power on HF-A11 Module! | | |
| Waiting fax connect | -Work Mode- | |
| Walking for connects. | Transparent Mode | Module MID |
| | O Agreement Mode | |
| Read Save CMD | HF-A11 | Reboot Reload |
| | Version: | 1 |
| Auto Config after Connection | | |
| Config By File | | Confirm Cancel |
| | | |



Power off and on module, Wait the module start up, connect WIFI network card to the module HF-A11x_AP network, after WIFI network ok, the module will auto connect to the setup software, the led go to Green, Click **Read**, then you can configure the WIFI module settings.

| #F-All Configure Tool | 72. 2 | |
|--|--------------------------------------|-------------------------------------|
| ★ 济南有人物联网技术 Jinan USR IOT Co., Lto | 有限公司 USR-WIF | -1232-Setup |
| Network Connect | Module Management Application Settin | ng AP Mode Setting STA Mode Setting |
| First set your PC IP address Statically: | WIFI Mode | Web Login- |
| 10, 10, 100, 123/255, 255, 255, 0 | AP mode | User admin |
| Next to restart this program! | ◯ STA mode | Password admin |
| And then to power on HF-A11 Module! | | |
| Connected | Transparent Mode | Module Management |
| Configure Management | | Reboot Reload |
| Read Save CMD | HF-A11 Version: 3.29.8 | |
| CMD File set_file.txt | | |
| Config By File | ۶ | Confirm |
| | L | |

2.4 Hand AT Command

This method is similar with 2.2, it is by hand while the 2.2 do by software. This show the AT commands work detail, if you would like to configure the module via you MCU, this is important for you.

Connect your module COM Port to PC COM port.

First send three plus signs +++, notice only three chars, no $\langle CR \rangle$ and no $\langle LF \rangle$, you will receive a char a send back from module, then in three seconds, send back a char a back to the module, after that you will receive +ok to notice it has go in to AT command mode, send AT+H and Enter (CR and LF ,0x0D + 0x0A) to get help, AT+ENTM and Enter for back to transparent transmission mode. More detail AT commands description please see the data sheet, the test step screen is here, (Only receive message, send chars can't be see)

| 😔 USR-TCP232-Test | RS232 to Ethernet Convert tester | | |
|---|---|------------------------|--|
| File(F) Options(Q) Help | о Ю | | |
| COMSettings PortNum COM3 | COM port data receive | Network data receive | NetSettings (1) Protocol TCP Server |
| DPaity NONE DataB 8 bit | AT+H | | (2) Local host IP 10.10.100.100 |
| StopB 1 bit 💌 | +ok= AT+: NoNE command, reply "+ok". AT+E: Echo ON/Off, to turn on/off | | (3) Local host port 23 |
| Recy Options | command line echo function. AT+ENTM: Goto Through MOde. AT+NETP: Set/Get the Net Protocol | | Recv Options |
| Add line return Receive As HEX | AT+UAR T: Set/Get the UART Parameters. AT+UARTF: Enable/disable UART | | │ Add line return │ Receive As HEX |
| │ Receive Pause <u>Save</u> <u>Clear</u> | AutoFrame function. AT+UARTFT: Set/Get time of VART AutoFrame. | | Receive Pause |
| Send Options | AT+UARTFL: Set/Get frame length of UART AutoFrame. AT+TMODE: Set/Get the Data Transfor | | Send Options |
| Auto Clear Input | Mode (Through or Agreement) AT+WMODE: Set/Get the WIFI Operation Mode (AP or STA) | | Auto Checksam Auto Clear Input Send As Hex |
| Send Recycle Interval 100 ms | atth Seed | http://www.usr.cn Send | Send Recycle Interval 100 ms |
| if Ready! | Send: 6 Recv: 1767 Reset | j j∉ Ready! Send:0 | Recv: 0 Reset |



3. Program demo

3.1 UART RS232 programm

AT default transparent transmission work mode, the module UART port for user can be looks as a normal RS232 device, almost all kinds of MCU has UART use demo code, please GOOGLE them.

User MCU connect to WIFI module is TXD to RXD and RXD to TXD, detail please see hardware description docs.

Notice, because the LINUX need about 20 seconds to start up, if your data can't be lost, advise you use a GPIO connect to Ready pin, after the Pin go to Low and delay 2 seconds then send user data. Also there is a Link IO for declare the WIFI network connect status. An other compatible method is use hardware control RTS,CTS.

3.2 TCP IP Socket program

For network, it is a stand TCPIP socket data, we supply VB/Delphi/Boland C++ and android demo code for user, the socket programs always use OCX or API for communication, such as winsock.OCX, network can use TCP Server/TCP client/UDP any one of them, can be setup in the module and software opposite with it, TCP Server with TCP Client, UDP opposite UDP, follow picture is Delphi/VB and android demo code screen.



3.3 Virtual COM PORT

Sometimes the user has RS232 link system, in order to do less work, you can use Virtual COM PORT soft ware to convert TCPIP data to Virtual Serial Port, your old RS232 software can still be used, the software convert it to TCPIP and send via WIFI, it looks like an wireless RS232 COM port, More detail please look at the COM-RED software user guide and the application detail.

| 〒 🧼 存储卷 |
|---------------------------------------|
| 回 🦻 端口 (COM 和 LPT) |
| ELTIMA Virtual Serial Port (COM3) |
| PCI_COM (COM3) |
| PCI_COM (COM4) |
| — 📝 打印机端口 (LPT1) |
| ————————————————————————————————————— |
| ☆▲ [*] 名Th鸽+F |
| |

| Serial Port | C042 | TCP/IP Port | |
|------------------|---------------------|---------------------------|--|
| Ravel Rate | 196000 | C PC act as TCP Client | |
| Parits | Non | C PC act as TCP Server | |
| Data Bits | 8 7 | Local ID Address | |
| Stop Bits | 1 1 | 192.168.0.101 | |
| Flow Control | None - | Local Port | |
| Buffer Size: | 8192 | 5000 | |
| Create Virtua | COM port | Use UDP instead of TCP/IP | |
| E Buffer data il | TCP/IP port closed | | |
| | s é balosa transmit | 1/0 Options | |
| Timeout va | kue (molt 150 | | |
| | | | |



4. Join module to normal home WIFI network

Above description is just is LAN, in practical application, you may need to connect to normal WIFI network, to connect data to LAN server, now we have a short description on this.

4.1 first, you need to login to your WIFI router to see some information, SSID name, user name and password, Encrypt type.

| 无线网络基本设置 | 无线网络安全设置 |
|-------------------------------|---|
| 本页面设置路由器无线网络的基本参数。 | 本页面设置路由器无线网络的安全认证选项。 |
| SSID号: TP-LINK_14D24E | 文王提示・Jikk理Mad文王, Maxi推得开启文王改重, 开使用mra- PSK/WPA2-PSK AES加密方法。 |
| 信道: 自动 ♥ 模式: 11bgn mixed ♥ | ○ 不开启无线安全 |
| 频段带宽: 自动 🖌 | |
| 最大发送速率: 300Mbps 🗸 | 认证类型: 自动 ✓ |
| ☑ 开启无线功能 | 加密算法: AES 🗸 |
| ☑ 开启SSID广播 | PSK密码: www.usr.cn |
| □开启WDS | (8-63个ASCII码字符或8-64个十六进制字符) |
| | 组密钥更新周期: 86400 |
| 【保存】【帮助】 | (单位为秒,最小值为30,不更新则为0) |

4.2 visit http://10.10.100.254 go to setup web page. Choose Station work mode.

| Working N | Iode Configuration | |
|--|--------------------|--|
| You may configure the Uart-WIFI module wifi mode and data transfor mode. | | |
| O AP Mode: Access Point STA Mode: Station Mode | | |
| Data Transfor Mode | Transparent Mode | |

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4.3 Go to STA Interface Setting page, fill the settings, SSID, Security Mode and password then click Apply.



| Mode Selection |
|-----------------------|
| AP Interface Setting |
| STA Interface Setting |
| Application Setting |
| Device Management |
| |

STA Interface Setting

You could configure STA interface parameters here.

| STA Interface Parameters | |
|--------------------------|-----------------------|
| AP's SSID | TP-LINK_14D24E Search |
| MAC Address (Optional) | |
| Security Mode | WPA2PSK |
| Encryption Type | AES V |
| Pass Phrase | www.usr.cn |
| | Apply Cancel |
| WAN Connection Type: | DHCP (Auto config) |
| DHCP Mode | |
| Hostname(Optional) | |
| | Apply Cancel |

Also we supply a new function for search router after firmware 3.29.xx, Click Search near the SSID input form,

| C Vir | 🛇 Vireless Site Survey - Vindows Internet Explorer | | | | | | |
|-------------------------|--|-------------------|------|---------|------------|----------------|-----------------|
| 00 | G 🕞 🗢 🙋 http://10.10.100.254/m2m/ 🖌 🐼 🗲 🗙 🔎 百度 | | | | | | |
| Site | Site Survey | | | | | | |
| | SSID | BSSID | RSSI | Channel | Encryption | Authentication | Network Type |
| $\overline{\mathbf{O}}$ | TP- LINK 14D24E | f4:ec:38:14:d2:4e | 15% | 4 | AES | WPA2PSK | Infrastructure |
| | Apply | Refresh | | | | | |
| | | | | | | | |

Choose the network you want to connect and Click Apply and back to fill password then apply.

Notice: If your AP still use our module, You need to change the Module LAN IP to not same with AP, for example to 10.10.99.254, to avoid IP conflict, other wise it would not work.



www.usr.cn

| Mode Selection | AP Interface Setting , such as : SSII | D, Security |
|-----------------------|---------------------------------------|----------------------------|
| STA Interface Setting | Wireless Network | |
| Application Setting | Network Mode | 11b/g/n mixed mode 🔽 |
| Device Management | Network Name(SSID) | HF-A11x_AP Hidden Isolated |
| | BSSID | 88:8B:5A:00:0E:F7 |
| | Frequency (Channel) | AutoSelect |
| | "HF-A11x_AP" Security Mode Apply | Disable y Cancel |
| | LAN Setup | |
| | IP Address | 10.10.99.254 |
| | Subnet Mask | 255.255.255.0 |
| | DHCP Туре | Server 💌 |
| | Default DHCP Gateway | 10.10.100.254 |
| | Apply | Cancel |

4.4 Go to Device Management page, Restart module.

| Application Setting | III wdie. | |
|---------------------|-----------------------|--------------|
| Device Management | | |
| | Adminstrator Settings | |
| | Account | admin |
| | Password | ••••• |
| | Apply | / Cancel |
| | | |
| | Restart Module | |
| | Restart Module | Restart |
| | Load Factory Defaults | |
| | Load Default Button | Load Default |
| | | n |
| | Update Firmware | |
| | Location: | 浏览 |
| | Apply | |
| | | |



4.5 After that you can find your module in WIFI router DHCP device list.

| 🖉 💵 VebServer - Vindows Inter | net Explorer | |
|--|--|--|
| 🔆 💽 🗢 👔 http://192.168.0.102/hom | e. asp | |
| 文件(E) 编辑(E) 查看(V) 收藏夹(A) | 工具 (E) 帮助 (H) | |
| <mark>会 收藏夹 🛛 🗧 🗸 🏉 M2M WebServer</mark> | × 🏀 TL-WR840N | 👌 • |
| V. W. K. | ★ TL-WE840N ★ 济南有人物联网技术有 Jinan USR IOT Co., Ltd. ♠ Mode Selection ♠ AP Interface Setting ♠ STA Interface Setting ♠ Application Setting ♠ Device Management | 取公司 Usi.cn 中文 正 Working Mode Configuration You may configure the Uart-WIFI module wifi mode and data transfor mode. 〇 AP Mode: Access Point ③ STA Mode: Station Mode |
| | | Apply Cancel Jinan Usr Technology Co. Ltd http://en.usr.cn Contact: tec@usr.cn QQ:835475229 86-531-55507297 |

Now, you may need to see the hardware description.



4. Contract information

Contact us:

Name: Jinan USR Technology Co., Ltd. Website: <u>http://www.usr.cn http://en.usr.cn</u> Address: 1#523, huizhanguojicheng, Gaoxinqu, Jinan, Shandong, China Email: <u>sales@usr.cn tec@usr.cn</u> MSN: <u>usrcn@hotmail.com</u> Phone: +86-531-55507297