

WIFI Relay User Manual

File version: V1.4



Content

1. Introduction	3
1.1 Features	3
1.2 Electric parameter	3
1.3 Packing list	. 3
1.4 Hardware	4
2. LAN Control	6
2.1 Android control	. 6
2.2 IOS control	7
2.3 PC control	. 8
2.4 WEB control	8
3. Remote control	9
3.1 Remote server control	9
3. Remote control & Port forwarding	10
4. Communication protocol	14
5. Contact	15



1. Introduction

1.1 Features

- WIFI interface, via WIFI connection for network control.
- Ethernet interface, can through the general network cable connection way to control.
- 5 channel large current output, 2 channel optocoupler input
- Unique AP+STA working mode, can work as AP when join into router. This allows the module accept local mobile terminal(cell phones, tablet PC) control as AP, when join in router to connect outer net.
- Unique dual TCP connect control, corresponding with above trait, local as TCP server accept client control, when connect to remote server as TCP client
- Supply core module detailed information, application program demo, support customized app (IOS, Android)

1.2 Electric parameter

- ♦ Working voltage: 12 v
- working current: 100 ma
- ♦ working temperature: 25 ~ 75 ° C
- storage temperature: -40 ~ 85 ° C
- ◆ storage humidity: 5% ~ 95% RH

1.3 Packing list

- Wi-Fi relay * 1
- 12v power adapter * 1
- User guide cd * 1





1.4 Hardware

Relay status when power on: 1&2 disconnected, 3 connect when power on, flicker when start on, then disconnect, 4&5 connect when power on

Five channel output is the relay contact

Two channel input is $0 \sim 5 v$ level signal input.



As shown in above figure:

The left for OUT1 ~ OUT5 five channel relay output: each channel has two terminals (example: OUT1 has two terminals, namely OUT11 and OUT12, other terminal, analogy OUT21 and OUT22, etc.), regardless of polarity, contact output.

The right is IN1 \sim IN2 two channel level signal input, used to test the power status, connect or disconnect.



Example: relay board control filament lamp





2. LAN Control

2.1 Android control



Install USR-WIFI-IO.apk in Android phone, you can get a new folder and icon USR-WIFI-I



Open your phone WIFI function, find and join USR-WIFI-IO network.



Open USR-WIFI-IO, picture as above



As the relay default TCP Server mode, IP: 10.10.100.254, port number 8899,

So in android app, IP and port number should also be 10.10.100.254, 8899. Then press the red "X" on right side.

Show green " $\sqrt{}$ ", ok, you can control relay now.

2.2 IOS control

Iphone operation is the same as Android.

In APP store, input USR to search our app. Download and install in your lphone. Open WIFI function, search and join USR-WIFI-IO network.

Carrier 奈	5:45	PM	
	USR-W	/IFI-IO	disconnect
10.10.100.2	54	889	99
	\bigcirc	0	
	1	?	2 ON () 4
00	OFF	9 (ON O
Notice: The n	umbers up	on 1~5 ci	an be modify.

Open the App, as shown in above picture.

Relay default TCP Server mode, IP: 10.10.100.254, port number 8899

So in Iphone app, IP and port number should also be 10.10.100.254, 8899. Then press "Connect" on top right conner.

You can control relay now.



2.3 PC control

Install the software USR-WIFI-IO.exe in Windows. Your PC search and join USR-WIFI-IO network.

撞 USR-VIFI-IO Remote Relay Co	ntrol ¥1.1.14	
File(E) Search(S) 中文(L) About(A)	2	
Search (?) Open (?) Module IP : MAC : Version 192 168 0 112 ACCR250R7504 USE-WTD	Information IP: 192.168.0.112 Port: 8899	
-logs		
Help: 1. Search module in LAN 2. Click searched device 3. Click button to control remote	output] output2 output3 output4	output5
GPIO S OUT O OK	All on All	off

Open the software, click Search, get default USR-WIFI-IO, IP 10.10.100.254, Port 8899, click open, then get information on right side, click the circle to connect, then you can control the device.

2.4 WEB control

Log in module built-in webpage: 10.10.100.254

Canno 🖸	ot find serve	r - Micros	soft Inte	rnet Explo	rer
File Edit	t View Fav	rorites To	ols Help		
G Back	• 🔘 •	* 2		Search	Se Fa
Address	10.10.100.2	254			
Conr	nect to 10.1	0,100.25	4	Efe	?×
User Pass	name: :word:	G admi	n mber my p	assword	~
		C	ОК	Can	cel

Username and password default "admin"



Mode Selection	
AP Interface Setting	WEB IO
STA Interface Setting	Note: only the module in "GPIO2 model", IO control effect
Application Setting	Output:
WEB IO	1 2 3 4 5
Device Management	Input:
	8 7
	All set to 1 All set to 0

Note: "Green" represent "1", "Red" represent "0".

In "WEB IO" page, you can see above interface and control relay. Red is Connected, Green is Disconnected.

3. Remote control

3.1 Remote server control



The relay support our new IOT protocol now, if you would like to have a try, please refer to USR-WIFI-IOT series document.



3. Remote control & Port forwarding

Here we only take the example of Android smart phone, other platforms are the same.

To control relay remotely, we need to do port forwarding and dynamic domain. Following is the diagram:



Step1: Join the WIFI relay to your router



Check your Wireless network Connection

Refresh network list, you can see USR-WIFI-IO, choose and connect to it, you can see status "Connected" in right side.





In your browser, input module IP address, default:10.10.100.254. Username and password is "admin"

Mode Selection	Working Mode Configuration
Interface Setting	You may configure the Uart-WIFI module wifi mode and data transfor mode.
STA Interface Setting	
Application Setting	AP Mode:
WEB IO	Station Mode
Device Management	
	TCP连接密码验证 开启 V
	Apply Cancel

In "Mode Selection" page, choose STA Mode, click "Apply"



<u>Inode Denotion</u>	STA Interface Setting		
AP Interface Setting	You could configure STA interface parameters here.		
Application Setting	STA Interface Parameters		
WEB IO	AP's SSID	TP-LINK_14D24E Search	
Device Management	MAC Address (Optional)		
	Security Mode		
	Encryption Type	AES 🕶	
	Pass Phrase	www.usr.cn	

In "STA Interface Setting" page, click Search, appear a AP list, choose your router. Input Pass phrase, then click "Apply"

STA Interface Setting	4.02.10.USR11 You may configure admini firware.	strator account and password, load default setting or update
WEB IO	Adminstrator Settings	
Device Management	Account	admin
	Password	admin
		Apply Cancel
	Restart Module	
	Restart Module	Restart

In "Device Management" page, click "Restart" Then relay will join your router.

Step 2. Router webpage for Port forwarding



TP-LINK				
TL-WVR300	NAT映射 多网段NAT	虚拟服务器 端口触	发ALG服务	
	NAT DMZ服务	/irtual Server		
系统状态 设置向导	NAT DMZ服务:	○ 启用 ⊙ 禁用		保存
接口设置	主机地址:	0.0.0.0]	帮助
对象管理	虚拟服务	1	I we nome it as relay	
任衛控制 ・ ・ ・ ・ 特 のrt for	warding外部端口:	36985 - 36985	indicate a router port	修改
 ・帯宽控制 ・ 连接数限制 	external port 内部端口:	8899 - 8899	relay default port	清除
•流量均衡 略由近黑	internal port 服务协议:	TCP/VDP 💌]	TTD AV
• <u>路田</u> 坂重 防火墙	protocol 内部服务器IP: internal server ll	192. 168. 0. 138	relay IP in STA mode, you can check this IP	į.
行为管控	启用/禁用规则:	⑧ 启用 ○ 禁用	in router not	

Log in your router

Choose Port forwarding Choose Virtual Server Service name: fill at will, example relay External port: a large number, example 36985 Internal port: relay port, default 8899 Internal server IP: relay IP, you can check this IP in router list

Note: different router has different page, you can check router manual if not sure

Step 3. Remote control



IP address: you router Public IP Port: 36985, you set in router page



4. Communication protocol

When module working in GPIO mode, PC or other network devices can connect with module (TCP/UDP) through the wifi, then control GPIO or read GPIO state through commands. Commands as follows:

- > GPIO n IN: set GPIOn as input, receive GPIO OK or GPIO NOK
- > GPIO n OUT 0: set GPIOn as output low level, receive command OK or NOK
- > GPIO n OUT 1: set GPIOn as output high level, receive command OK or NOK
- GPIO n SW: set GPIOn as output and change the previous high and low level status, receive GPIO OK or NOK
- GPIO n PWM m1 m2: set GPIOn output a high and low change level, m1 is high level time, m2 is low level time(time unit ms, min 10 ms), receive GPIO OK or GPIO NOK
- GPIO n GET: read GPIOn status, receive I0, I1, O0, O1 respectively means input low, input high, output low, output high

Notice: n can be 3,4,5,6,8,9,10, correspond with module pins. The GPIO4,10 can only be input, GPIO3 be output only.

GPIO READ receive the current state of all IO, representation method the same as GPIO n GET. For example, I1111010101001, I means input, O means output. 0 means low, 1 means high

4 and 10, these two pins take the reverse. Read 1, acturely 0, read 0, acturely 1. High means relay connect, Low means relay disconnect.



Appendix A: Version updates

V1.3 (Jun 4, 2013)

Firmware V4.02.08.25 added the control of each relay when start up, add two commands

at+iodefault=on/off/normal (on: all relay output is connect when start up off: all relay output is disconnect when start up normal: normal status, 1,2 connect; 3,4,5 disconnect)

at+iocontrol=on/off (on: open this function, off: disable this function) The two inputs control five outputs all on or all off (pin 10 all connect, pin 4 all disconnect, testing form is non-self locking key)

V1.4 (Dec 19, 2013)

Support new GPIO protocol, support remote server control of IOT series software.

5. Contact

Company: Jinan USR IOT Technology Limited Address: 1-728, Huizhan Guoji Cheng, Gaoxin Qu, Jinan, Shandong, China Tel: 86-531-55507297 86-531-88826739-811 Web: http://www.tcp232.net Email: freda@usr.so