# WIFI Relay User Manual

File version: V1.4

# Content

# 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

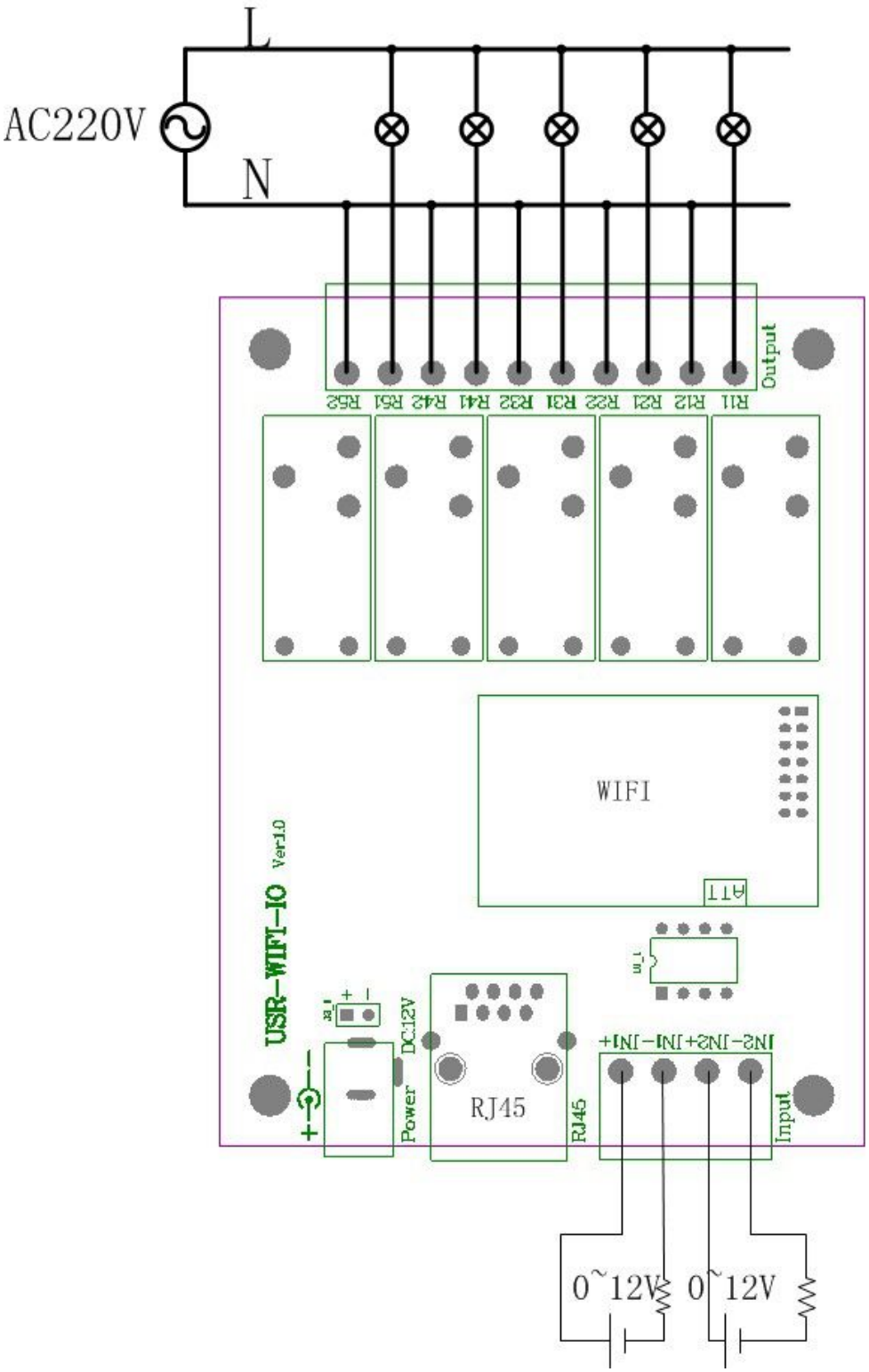
Two channel input is 0 ~ 5 v level signal input.


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 ~ 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 



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 “√” , 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 Iphone.
Open WIFI function, search and join USR-WIFI-IO network.


Open the App, as shown in above picture.

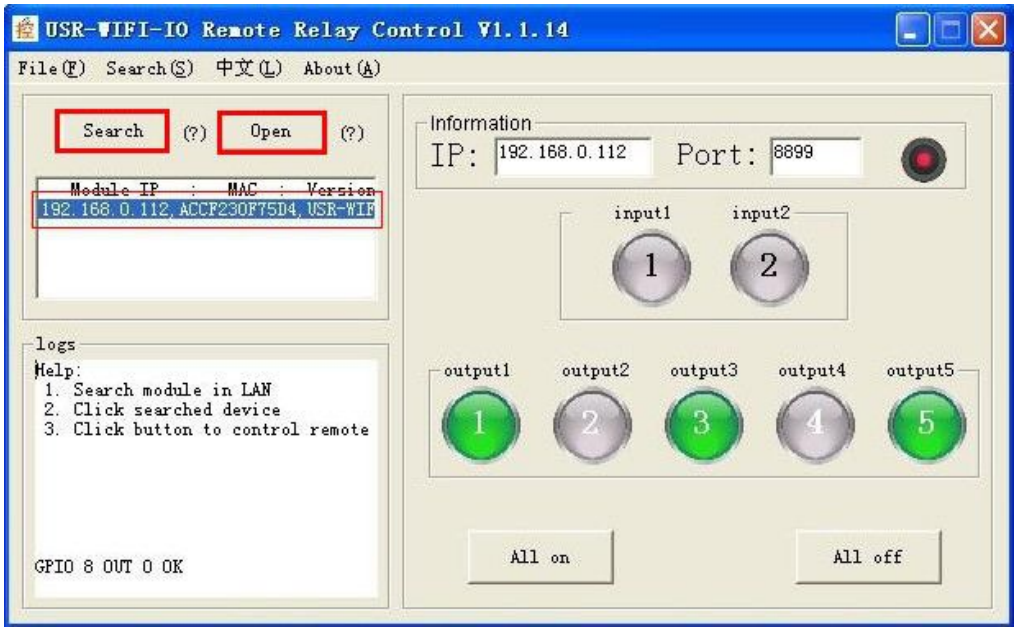
Relay default TCP Server mode, IP: 10.10.100.254, port number 8899

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.

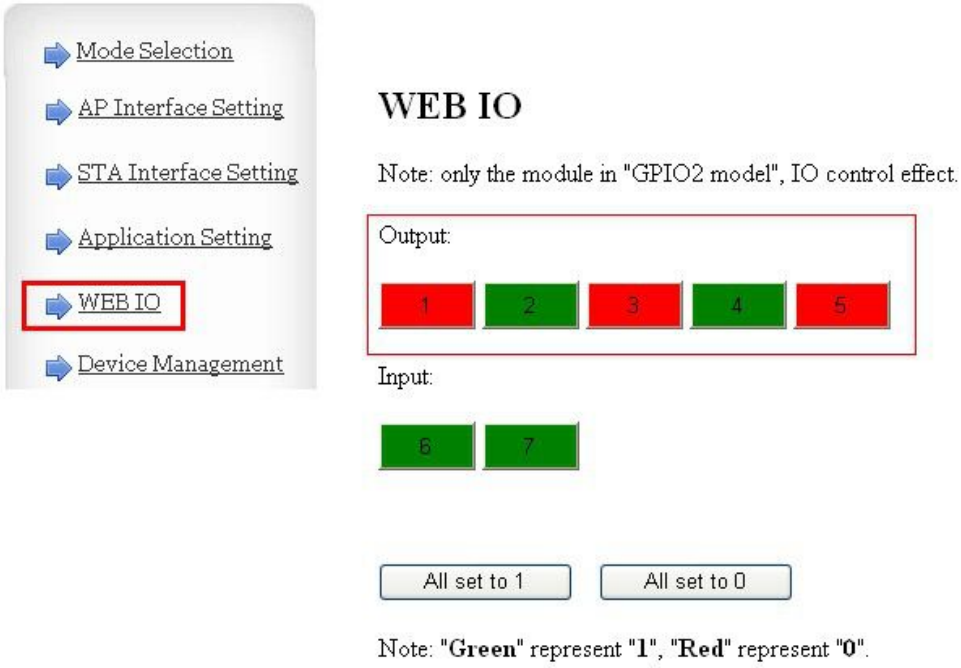



Open the software, click Search, get default USR-WIFI-IO, IP 10.10.100.254, Port 8899, click open, then get information on right side, click the circle to connect, then you can control the device.

## 2.4 WEB control

Log in module built-in webpage: 10.10.100.254

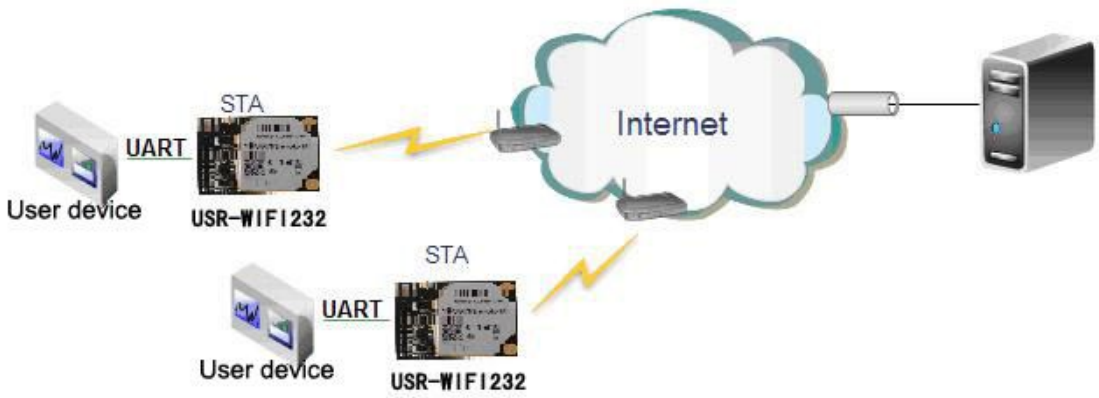

Username and password default “admin”




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

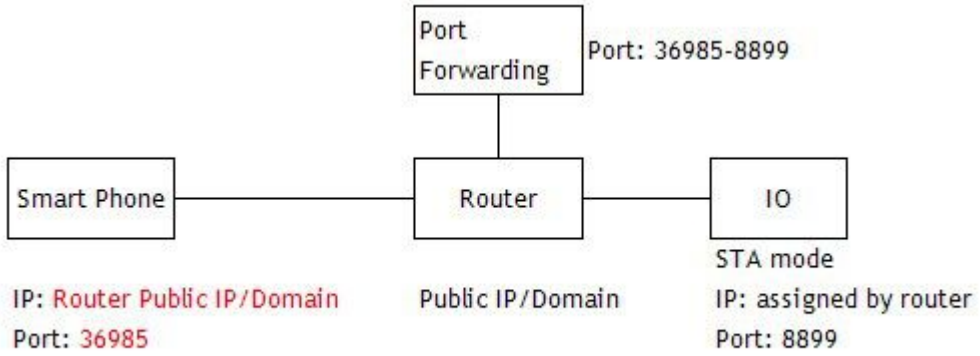



The relay support our new IOT protocol now, if you would like to have a try, please refer to USR-WIFI-IOT series document.

# 3. Remote control & Port forwarding

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

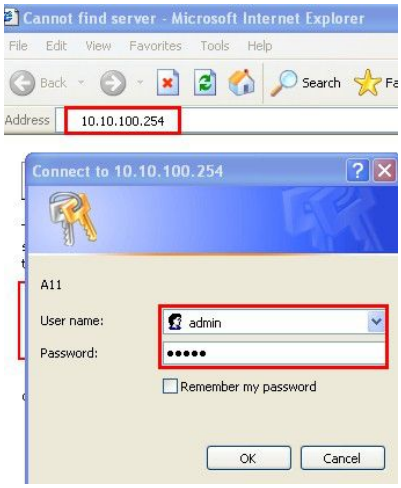
To control relay remotely, we need to do port forwarding and dynamic domain. Following is the diagram:



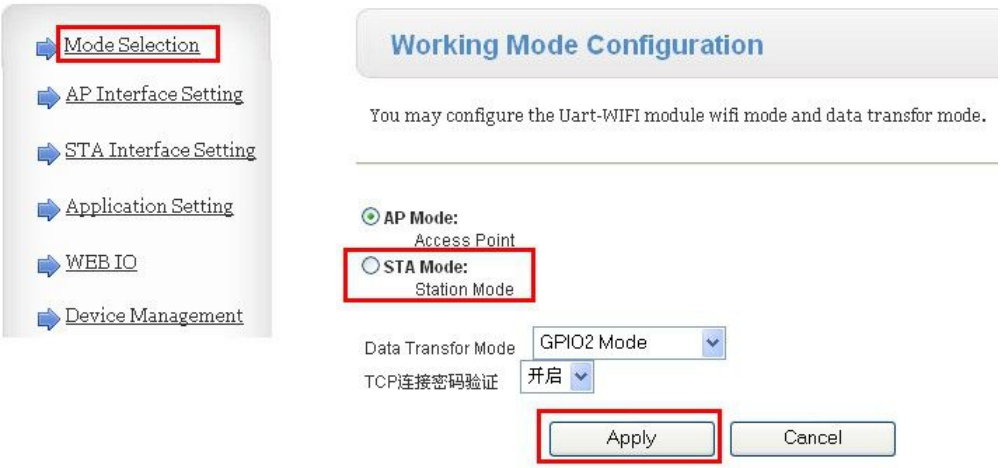

### Step1: Join the WIFI relay to your router


Check your Wireless network Connection

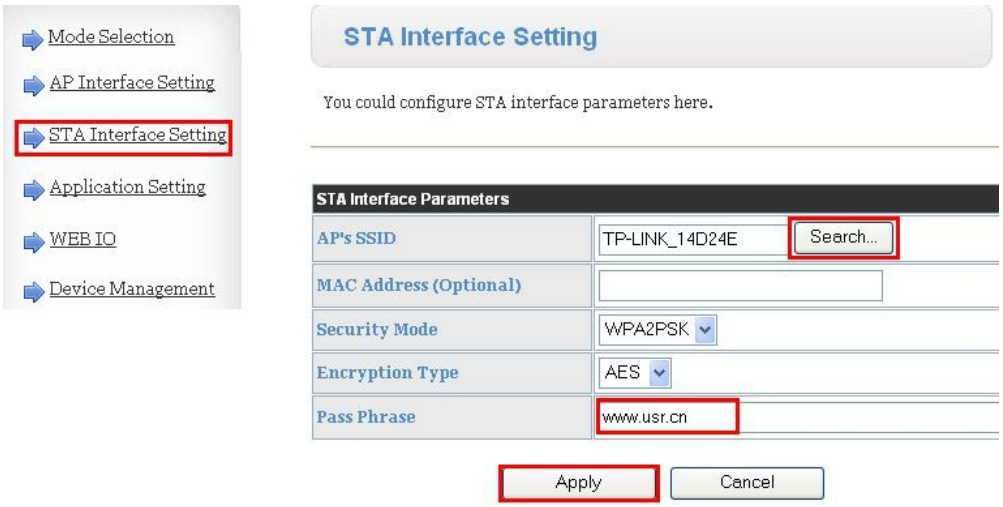
Refresh network list, you can see USR-WIFI-IO, choose and connect to it, you can see status “Connected” in right side.



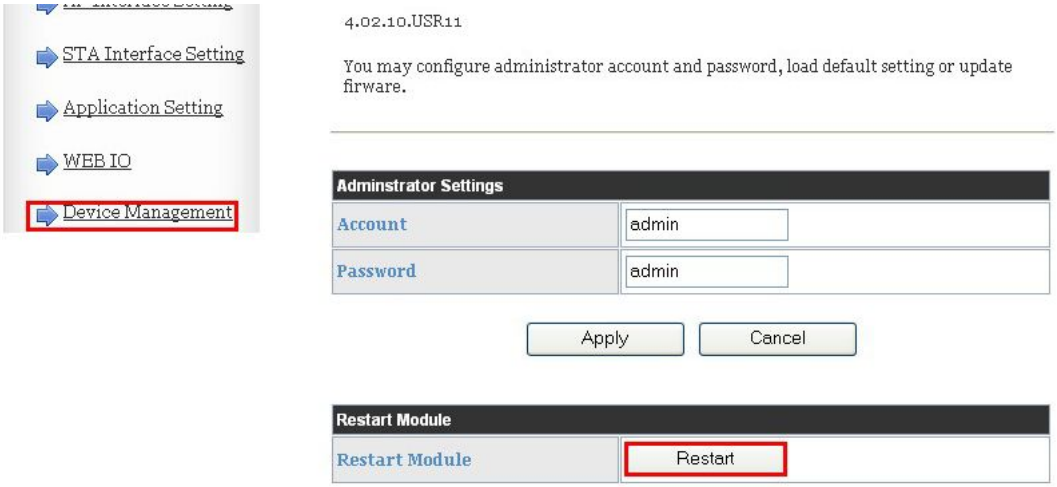

In your browser, input module IP address, default:10.10.100.254. Username and password is “admin”




In “Mode Selection” page, choose STA Mode, click “Apply”




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




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

## Step 2. Router webpage for Port forwarding


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, I1I1I0I0I0I0O1, 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

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