Story

This is a WiFi relay module based on the ESP8266 serial module. And it controls the relay working status through the app. The perfect kit for controlling all your household appliances with your phone wherever you are.

Function and characteristics

- Onboard ESP8266 WiFi module, in AP mode, can be connected by 5 clients at the same time.

- WiFi relay module has two work modes: (1) cell phones carry on the WiFi module directly; (2) cell phone and WiFi module carry on the same router.

- Transmission distance:
  > (1) In the open environment, the maximum transmission distance is 400m when the cell phone carry on the WiFi module directly; (2) when the WiFi module and cell phone carrying on the same router ,the transmission distance depend on the router's signal intensity;

- Onboard 5v, 10 A / 250 v AC 10 A / 30 v DC relay, absorbs 100000 times continuously; module with diode effusion protection, short response time.

Instruction

1. Onboard the ESP8266 WiFi module has three work modes: STA (client), AP (hot), STA + AP (hot +client). According to the work mode of WiFi relay module to choose the corresponding mode of ESP8266 WiFi module.

2. Module needs configuration by serial debugging software and the USB to TTL module sends serial command. TX, RX & GND pins of USB to TTL module connect to RX, TX & GND pins of ESP8266 relay module, and IN+ & IN- connect to DC5V power.
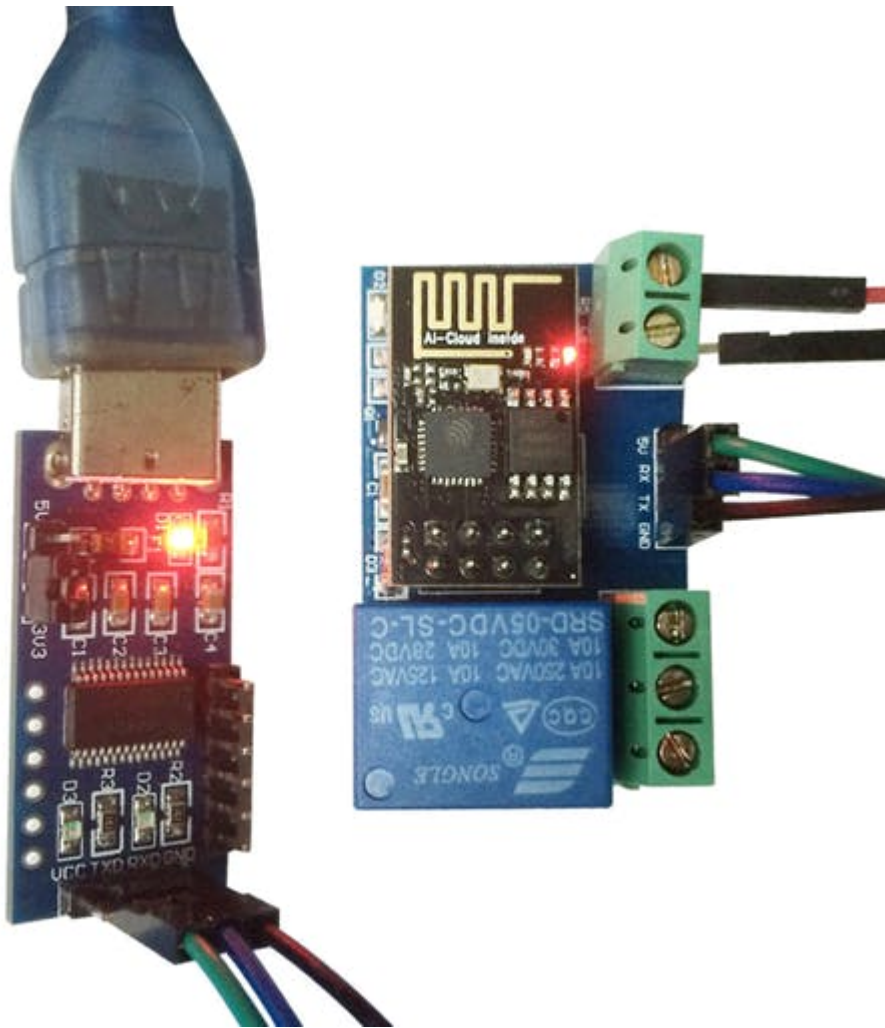
3. The default Baud rate of the WiFi module is maybe 115200 or 9600. You can send AT commands to change it, such as: AT+CIOBAUD=115200. I recommend you use 115200 in general conditions, but you should change it to 9600 when you use a cell phone to control the relay (because the Baud rate of the onboard MCU STC15F104W is 9600).
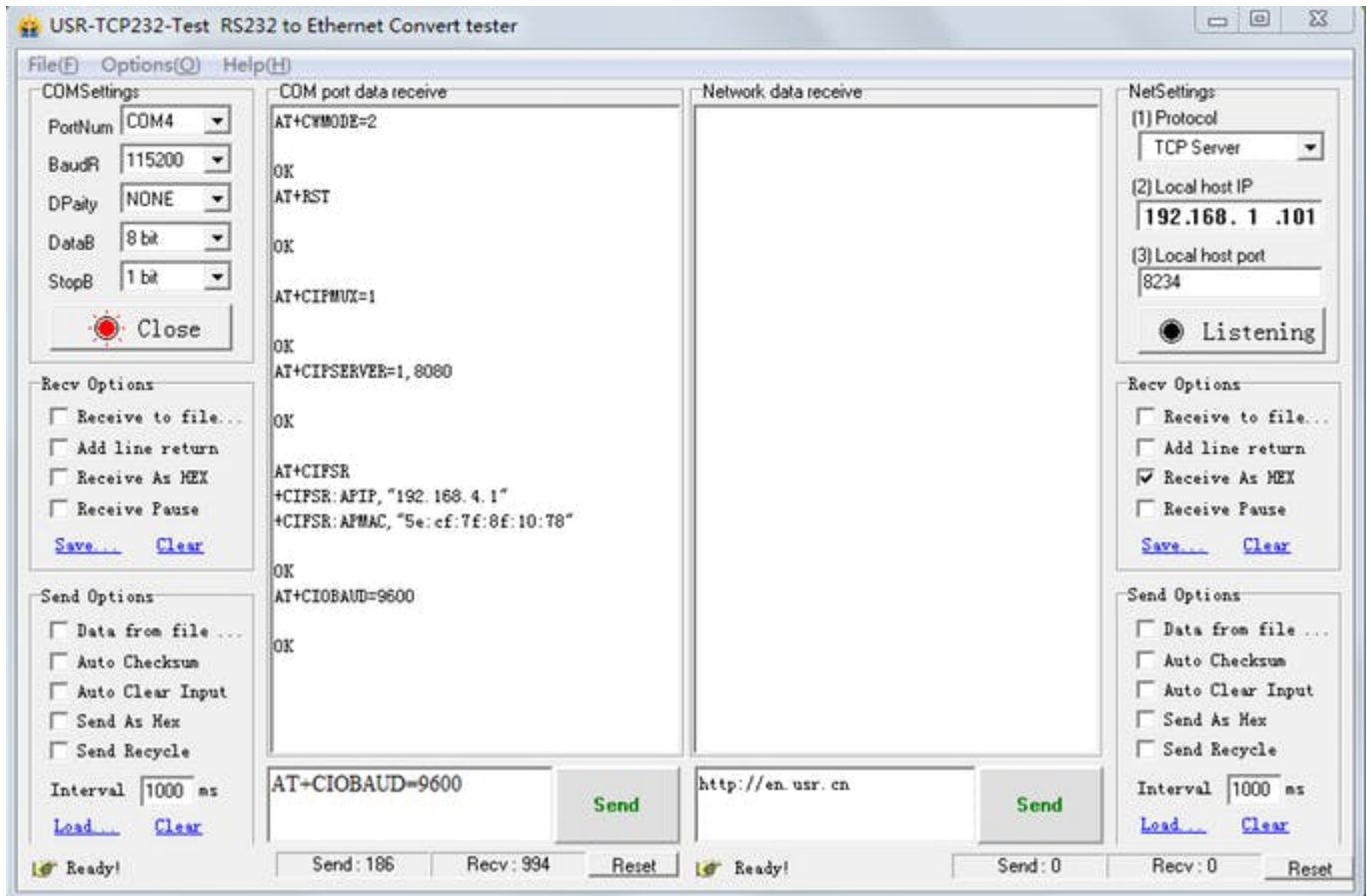
For work mode 1
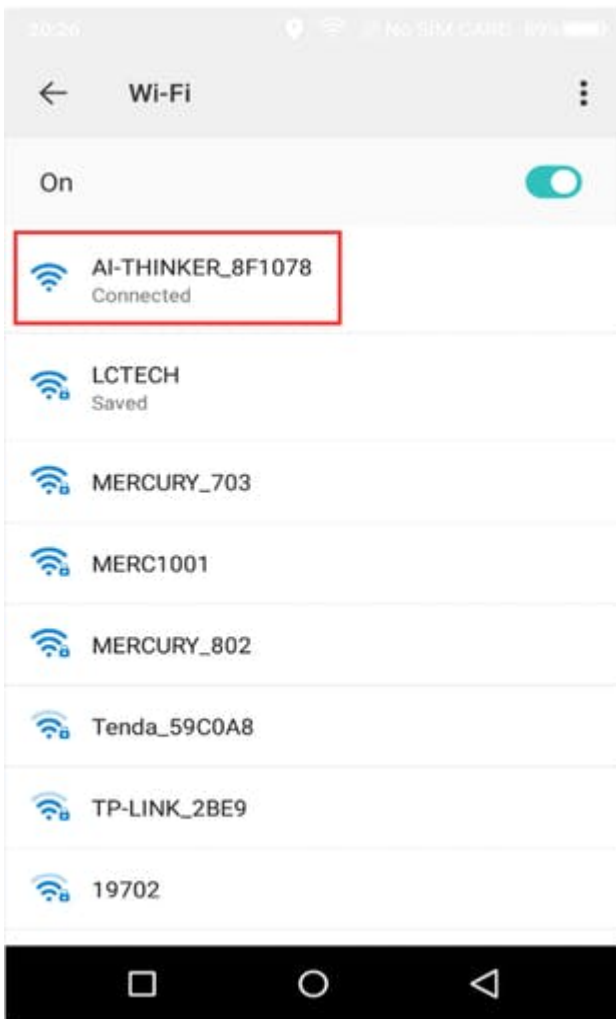
(Cell phones carry on the WiFi module directly.)

Open the "USR-TCP232-Test-V1.3" serial debugging software on the PC, send the following commands step by step:

- AT+CWMODE=2, select AP mode;
- AT+RST, reset;
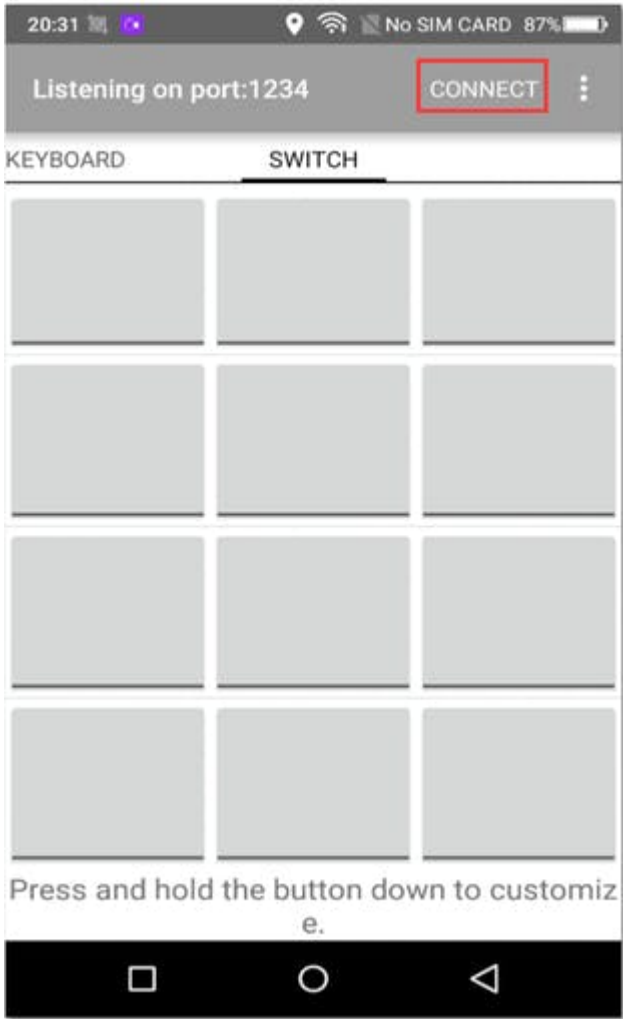- AT+CIPMUX=1, open multiple connections;

- AT+CIPSERVER=1,8080, configure the TCP server, set the port number;

- AT+CIFSR, view the IP address in AP mode, such as: APIP, "192.168.4.1";

- AT+CIOBAUD=9600, set Baud rate to 9600.

- Connect to the AP (Access Point) of ESP8266 WiFi module on an Android cell phone.
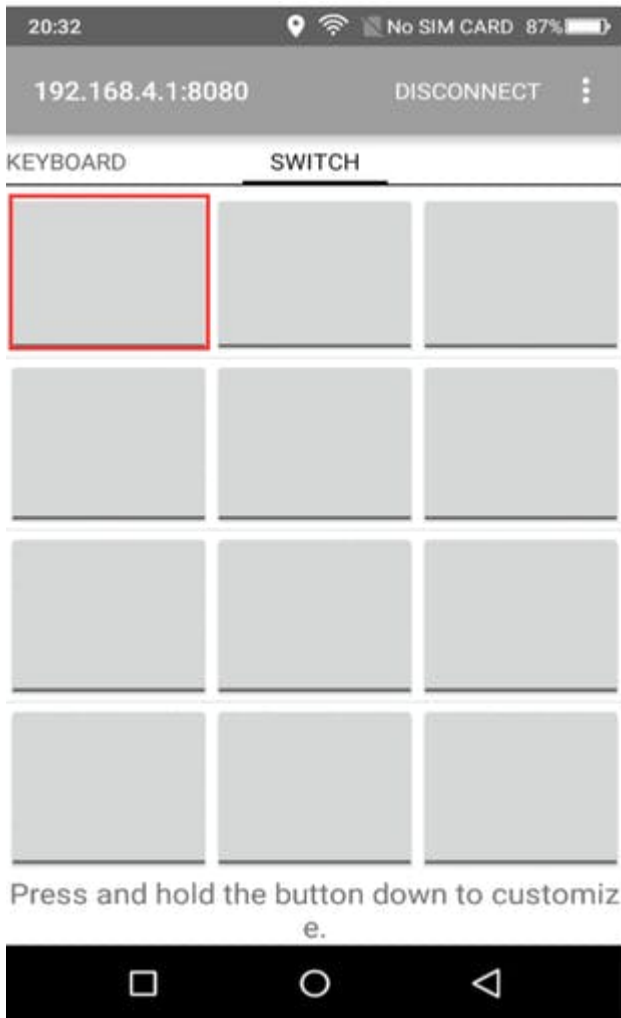
- Install the "EasyTCP_20" app on the Android cell phone and open it; click "connect" and enter the IP address and port.

Listening on port:1234   CONNECT

KEYBOARD   SWITCH

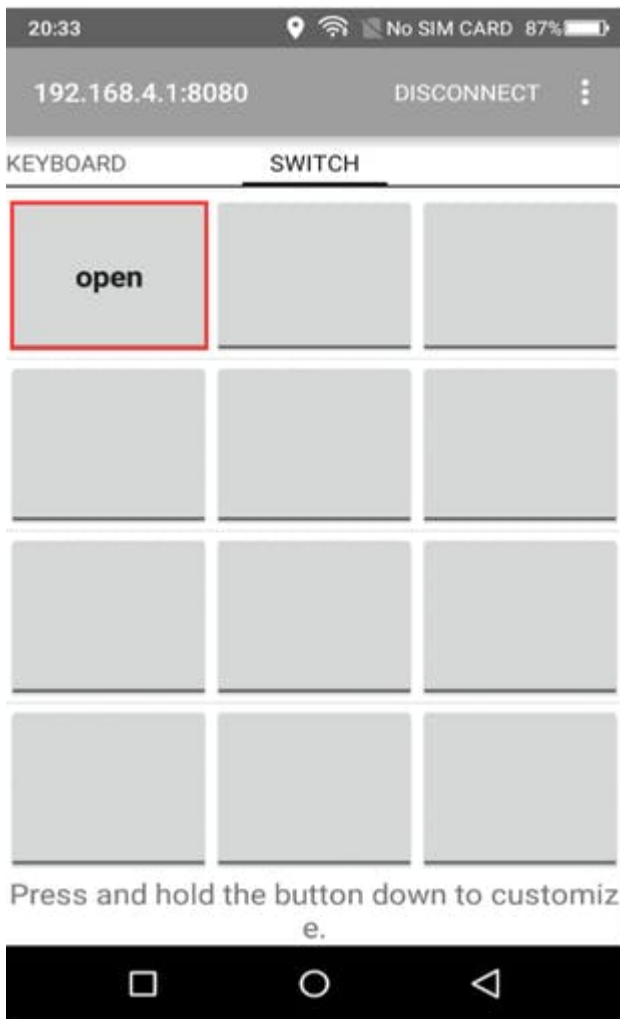Press and hold the button down to customize.

- Press the function blocks and enter the name and content of the serial command (A00101A2 open relay, A00100A1 closed relay, command format must be hex).

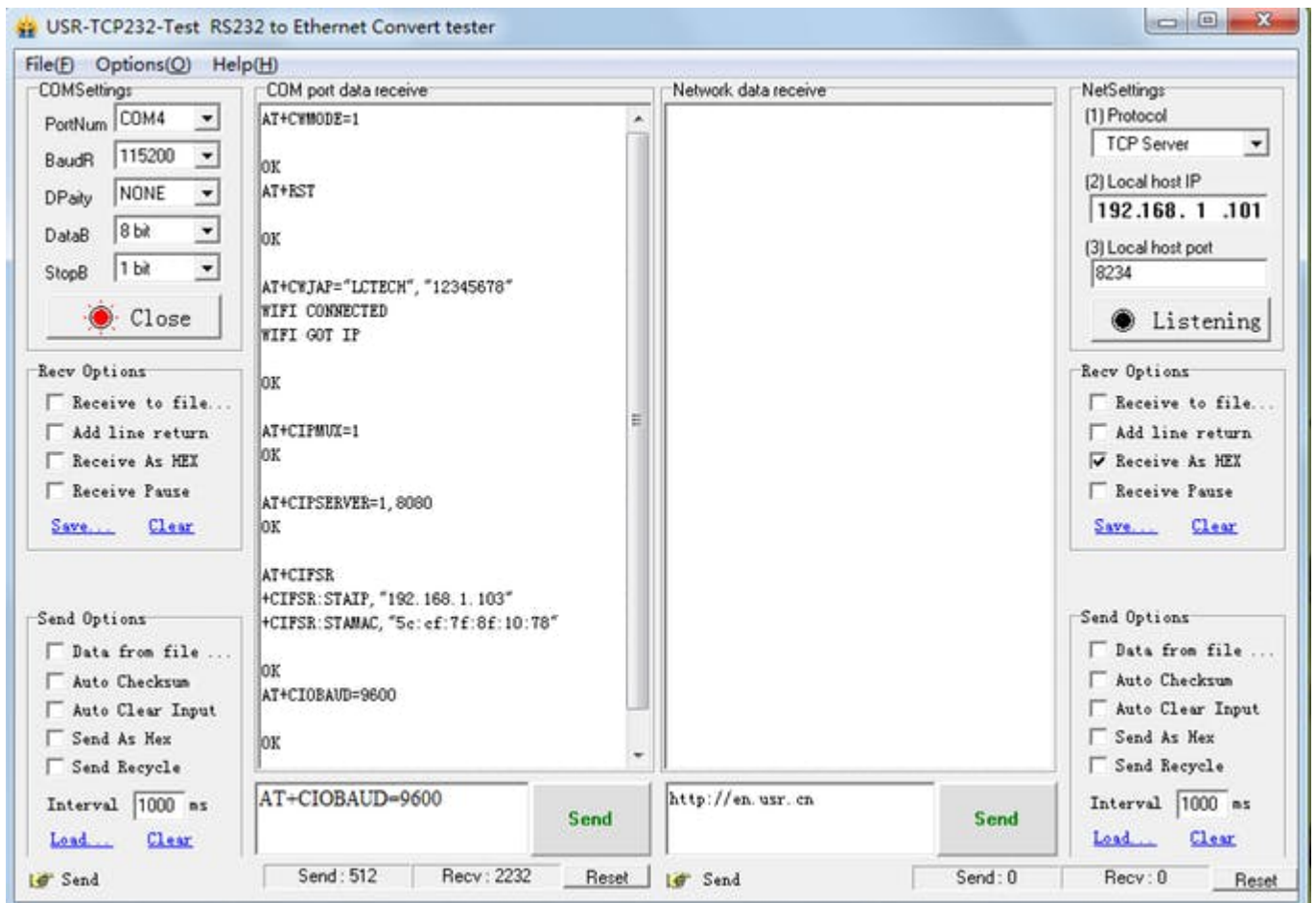- Finally you can send serial commands to control the relay by clicking the function blocks.

For work mode 2

(Cell phone and WiFi module carry on the same router.)

Open the "USR-TCP232-Test-V1.3" serial debugging software on the PC, send the following commands step by step:

- AT+CWMODE=1, select STA mode;

- AT+RST, reset;

- AT+CWJAP=<ssid>, <password>, let WiFi module connect to the router, for example: AT+CWJAP="LCTECH","12345678";

- AT+CIPMUX=1, open multiple connections;

- AT+CIPSERVER=1,8080, configure the TCP server, set the port number;

- AT+CIFSR, view the IP address in STA mode, such as: STAIP, "192.168.1.103";

- AT+CIOBAUD=9600, set Baud rate to 9600.

- Using cell phone connect to the router.
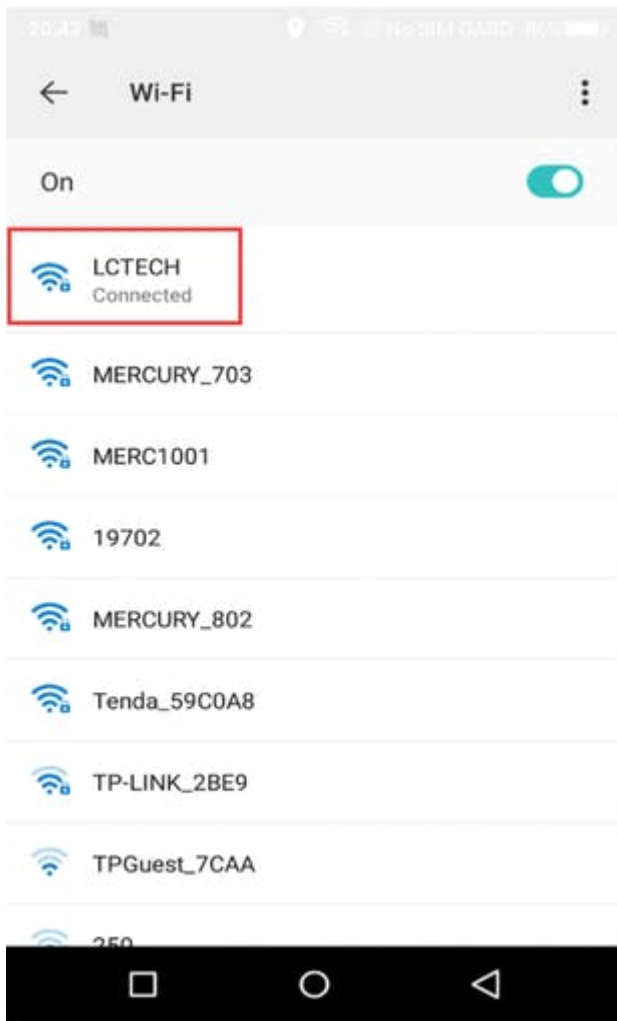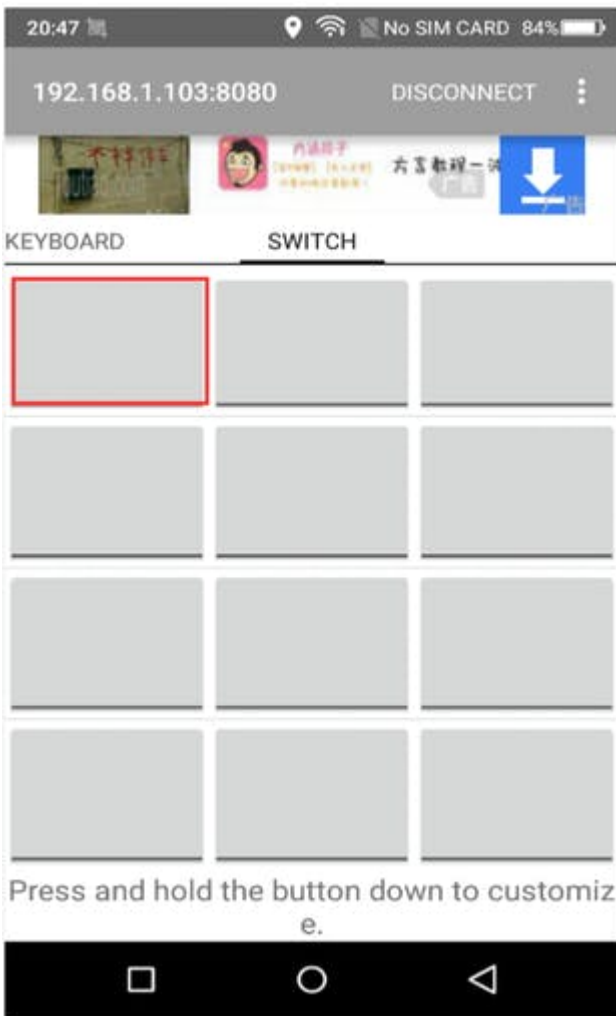
- Install the "EasyTCP_20" app on the Android cell phone and open it; click "connect" and enter the IP address and port.
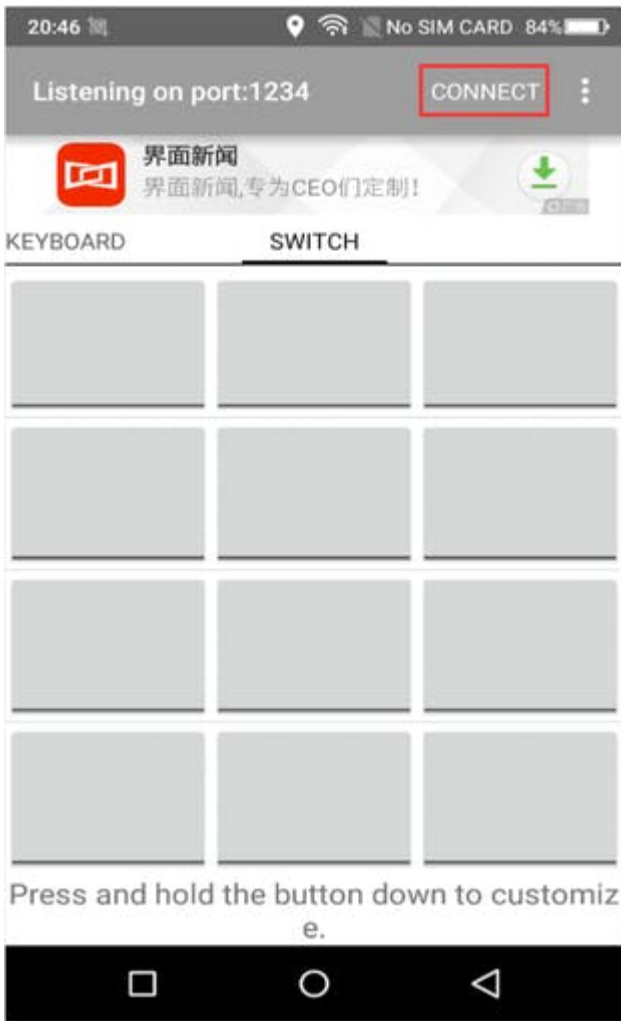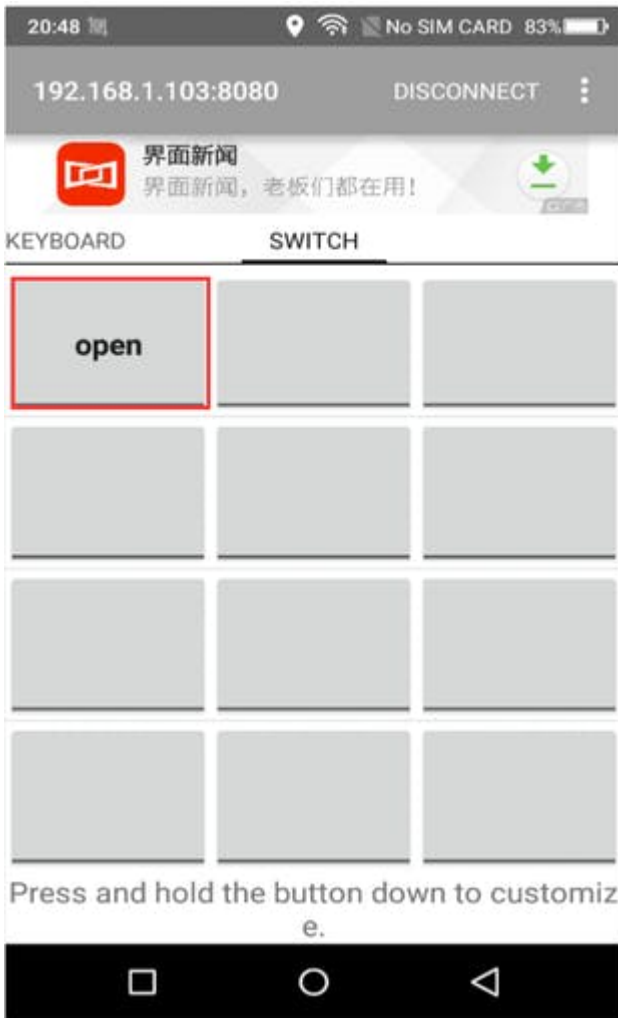
- Press the function blocks and enter the name and content of the serial command (A00101A2 open relay, A00100A1 closed relay, command format must be hex).

- Finally you can send serial commands to control the relay by clicking the function blocks.

Kind Reminder:

1. WiFi relay module need to reconfigure if restarted.

2. ESP8266 WiFi module has a timeout mechanism; when the cell phone hasn't sent commands to the ESP8266 WiFi module over a period of time (default is 180s), the ESP8266 WiFi module will kick off your cell phone. So you can send *AT + CIPSTO = < time >* on the PC to modify this time (time range 0-7200), such as: `AT + CIPSTO = 3600` .

3. If it does not return OK and just returns what commands you've sent when you use "USR-TCP232-Test-V1.3," configure the WiFi module. You can press ENTER before sending commands.

4. If it has no response when you use "USR-TCP232-Test-V1.3," configure the WiFi module, maybe the baud rate is incorrect. You can try 115200 or 9600. But when you use cell phone to control the relay, you must make sure the baud rate of WiFi module is 9600
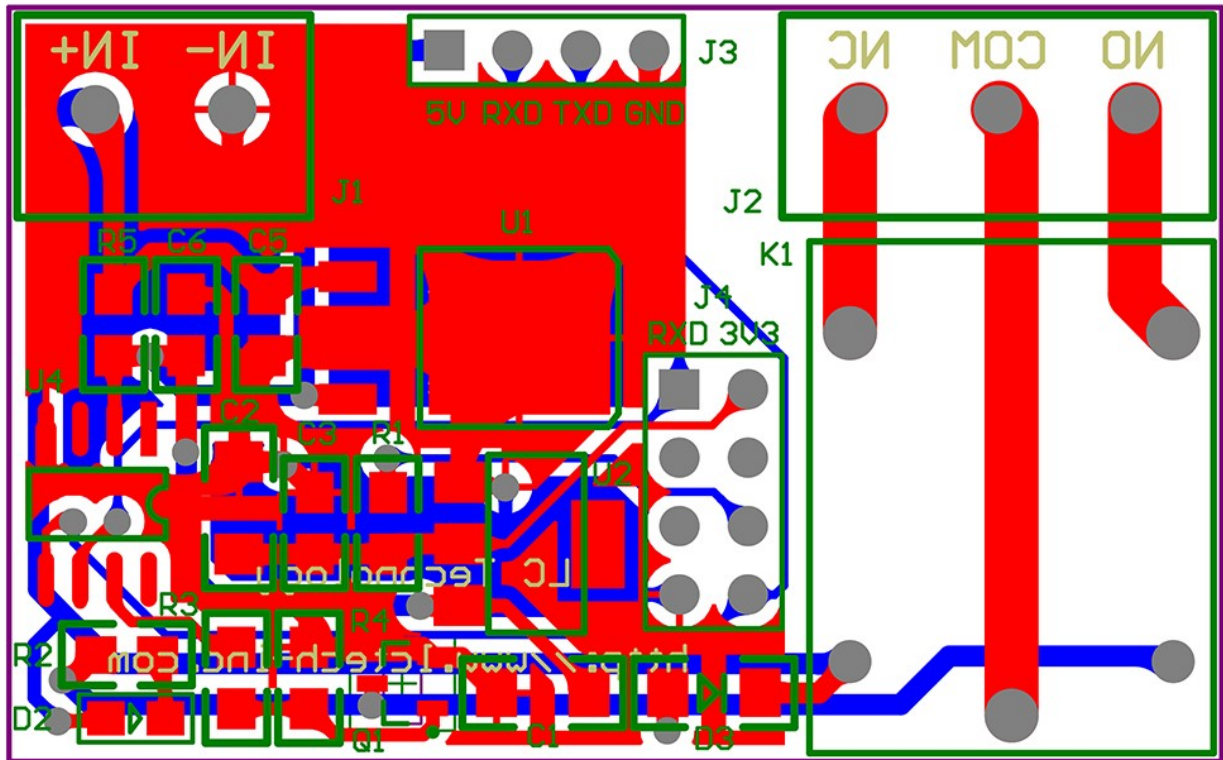
(send `AT+CIOBAUD=9600` can change it), because the baud rate of onboard MCU STC15F104W) is 9600.

5. If you want to use a computer to control the relay directly (baud rate is 9600), you can: unplug the ESP8266 WiFi module; and TX ,RX & GND pins of USB to TTL module connect to TX ,RX & GND pins of WiFi relay module; and IN+ and IN- connect to DC5V power. Send serial commands (A00101A2 open relay; A00100A1 closed relay, command format must be hex) with serial debugging software on the PC to control the relay.

6. If the relay can't open or close, maybe you need remove the R4, and use the USB to TTL module's VCC pin connect to relay module's 5V pin.

Custom parts and enclosures

esp8266_11213_07_BAadCXJG43.jpg

Schematics

Circuit

R5=0R   VCC=5V
R5=NULL   VCC=12V

R5
0R

VCC

U1

IN   OUT
GND

3

C5
null   null   2

U2   ASM1117-33

IN   OUT
GND

+5   3   2   +3.3

1

C6
null

C1
10uF

C2
10uF

C3
0.1uF

J1
1
2
Header 2

GND

GND

VCC

D2

D3
1N4148

R2
1K

K1

NC   J2
COM   1
NO   2
      3
Header 3

Q1
J3Y

+5
RXD
TXD
GND

J3
1
2
3
4
Header 4

J4
RXD   1   5   +3.3
GPIO0 2   6   RST
GPIO2 3   7   CH_PD
       4   8   TXD

GND

R1
10k

+3.3

U4
+5   1   P3.4   P3.3   8
      2   VCC   P3.2   7
      3   P3.5   P3.1   6   RXD
      4   GND   P3.0   5   TXD

GND

R3
10K

R4
4.7K

GND

Header 4X2A_

STC15F104-SOP8