

# IOT Relay User Manual

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# 1 Product Overview

## 1.1 Overview

Support Ethernet, WiFi, RS485, CAN  
10/100Mbps ethernet, Auto-MDIX,DHCP ip,Static IP  
WiFi 802.11 b/g/n, MAX 150Mbps  
Digital input, can be Local Button control(SelfLock/Jogging/Delay)  
Support RELAY On/OFF/Jogging/Delay.  
Support HTTP GET CGI, UDP, TCP Server, TCP Client  
Support Modbus-RTU/ASCII/TCP/UDP/WIFI  
Support Modbus-RTU Over TCP/UDP/WIFI  
Support Modbus-ASCII Over TCP/UDP/WIFI  
Support WEB control  
Support MQTT, CoAP  
Support NTP, IP Watchdog, Task timer  
Support Domoticz, Home Assistant, openHAB

Home Automation System Support:

Name	How to
Domoticz	<a href="#">Appendix II How to use Domoticz</a> <a href="https://github.com/dtlzp/Domoticz-Dingtian-Relay-Plugin">https://github.com/dtlzp/Domoticz-Dingtian-Relay-Plugin</a> <a href="#">Software version &lt;=V2.16.xx, please use V1.1 for github</a> <a href="#">software version &gt;=V2.17.xx, please use V1.2 for github</a>
Home Assistant	<a href="#">Appendix VI How to Home Assistant</a>
openHAB	<a href="#">Appendix VII How to openHAB</a>

Notice:

- 1 Close your firewall
- 2 All command and script run as root/administrator

SDK download link:

[http://www.dingtian-tech.com/sdk/relay\\_sdk.zip](http://www.dingtian-tech.com/sdk/relay_sdk.zip)

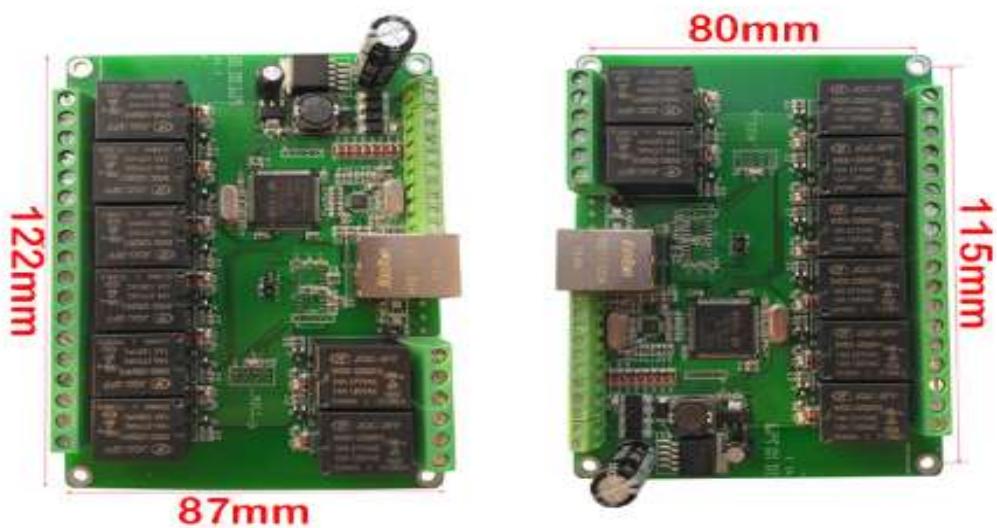
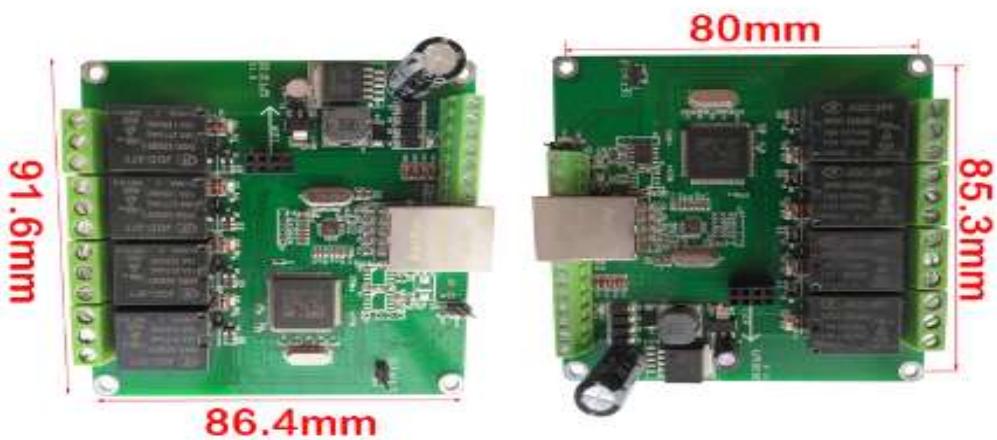
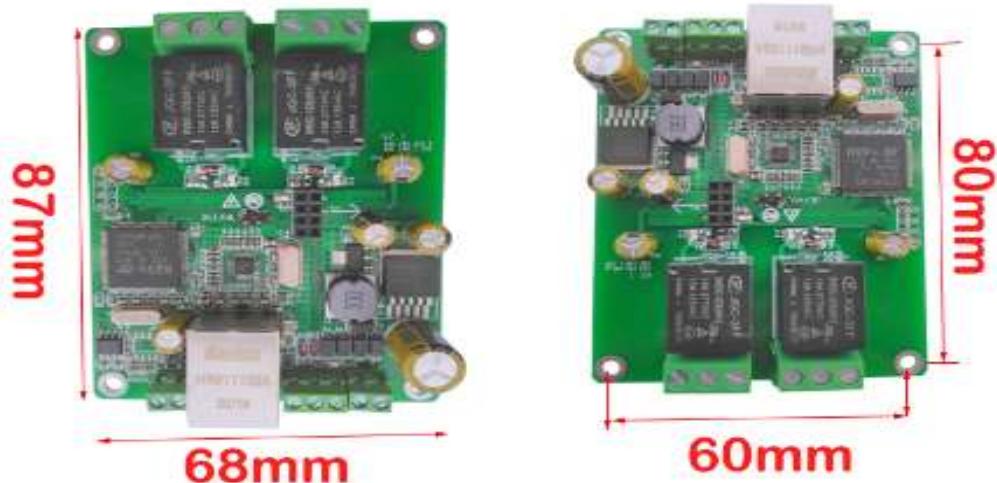
## 1.2 Technical Parameters

Function	Interface	RJ45/ RS485/CAN/WIFI
	Baudrate	100M/115200bps/125kbps/150Mbps
	Protocol	TCP server/client, UDP HTTP GET CGI, Modbus-RTU/ASCII/TCP/UDP/WIFI Modbus-RTU Over TCP/UDP/WIFI Modbus-ASCII Over TCP/UDP/WIFI MQTT CoAP
	Home Automation System	Domoticz Home Assistant openHAB
	Others	NTP IP Watchdog Task timer
Output	Relay Power	AC 250V/10A,DC 30V/10A
	Contacts	Normally Close(NC) Normally Open(NO)
	Delay	1~65535 seconds
	Momentary	Pull in 0.5 seconds, automatically release
Temperature and Humidity	Storage temperature	-40°C to +70°C
	Operating temperature	-20°C to +70°C
	Relative humidity (during operation)	25°C @ ≤95%, no condensation
Power	Power Specifications	12/24VDC(recommend) 12/24VAC
	Current	2 channel: 0.15A/12V(recommend 1A/12V) 4 channel: 0.25A/12V(recommend 1A/12V) 8 channel: 0.5A/12V(recommend 2A/12V)
	Power consumption	2 channel: 2W 4 channel: 3W 8 channel: 5W

## 2 Image and Size

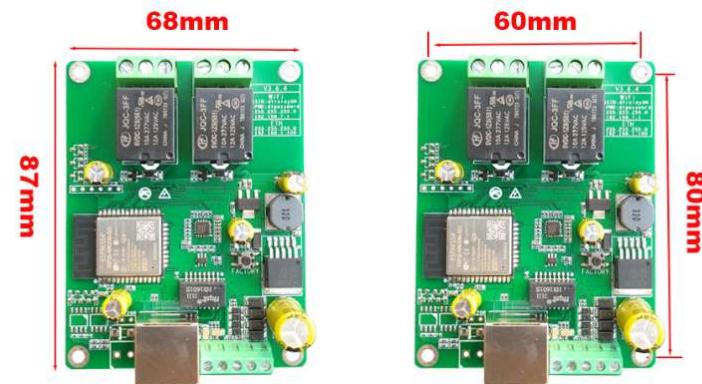
### 2.1 Hardware version <3.x.x

Hole size: 3.5mm



## 2.2 Hardware version >=V3.x.x

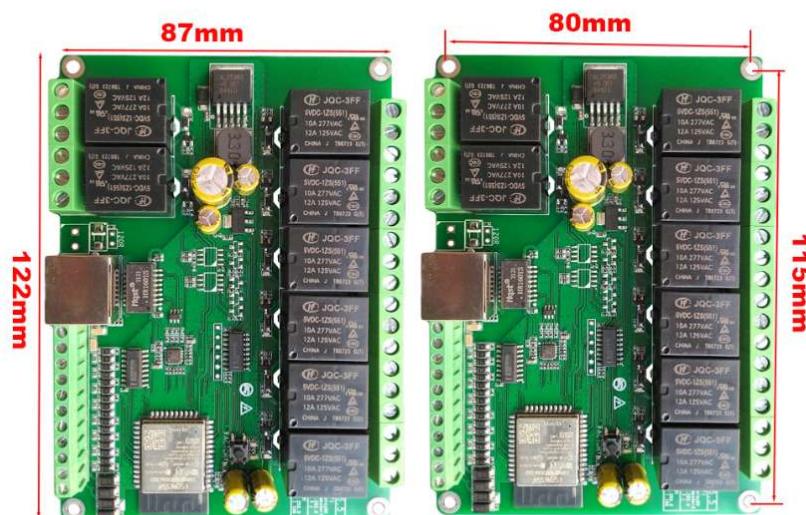
Hole size: 3.5mm



**2CH relay board**  
Size of relay: 87\*68mm  
Distance of hole: 80\*60mm



**4CH relay board**  
Size of relay: 91.6\*86.4mm  
Distance of hole: 85.3\*80mm



**8CH relay board**  
Size of relay: 122\*87mm  
Distance of hole: 115\*80mm

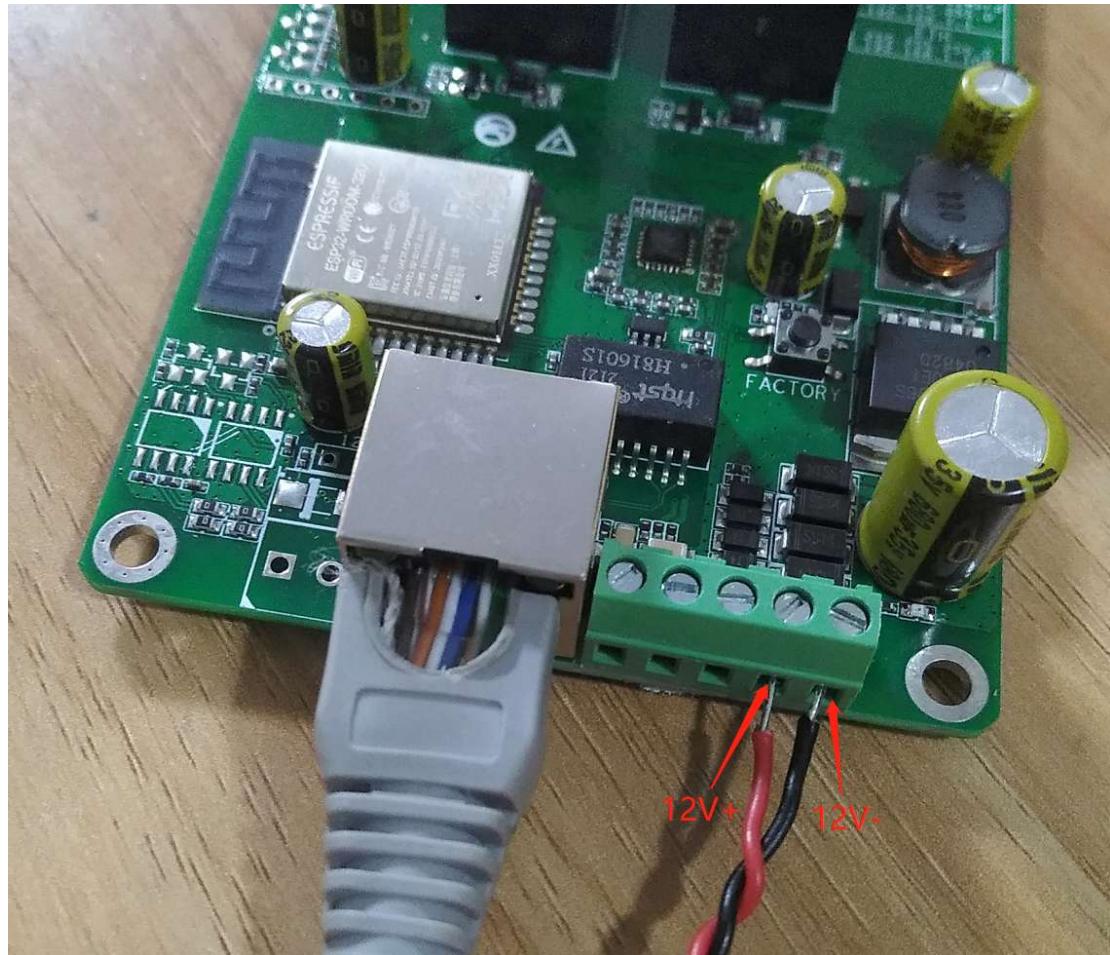
## 2.3 Case

The 2CH,4CH,8CH Case is ABS material, Standard DIN35 rail installation

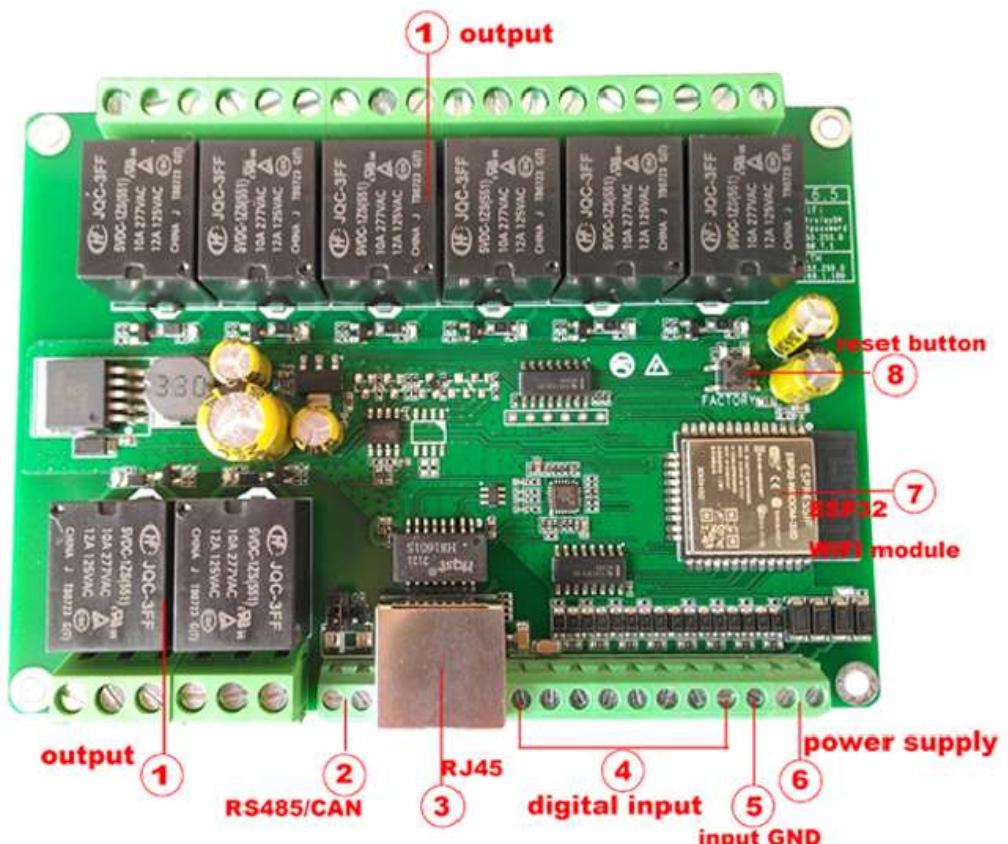


# 3 Interface Description

## 3.1 Power Supply

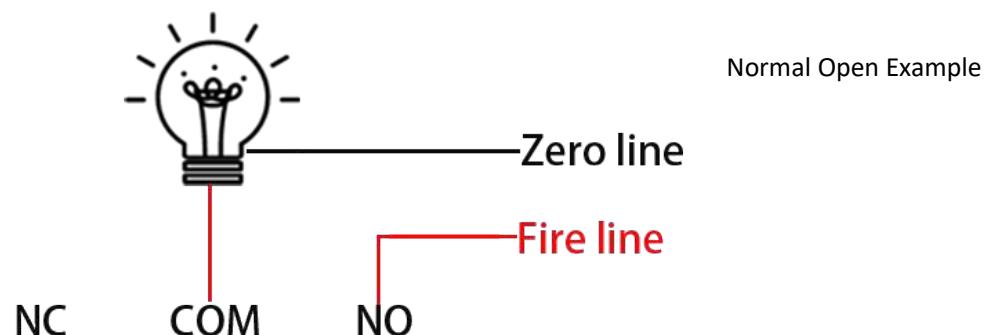
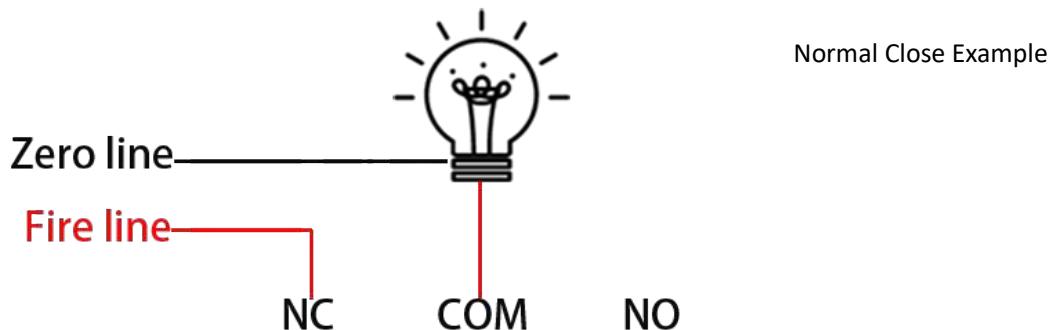


### 3.2 Funcation



### 3.3 Relay Contact

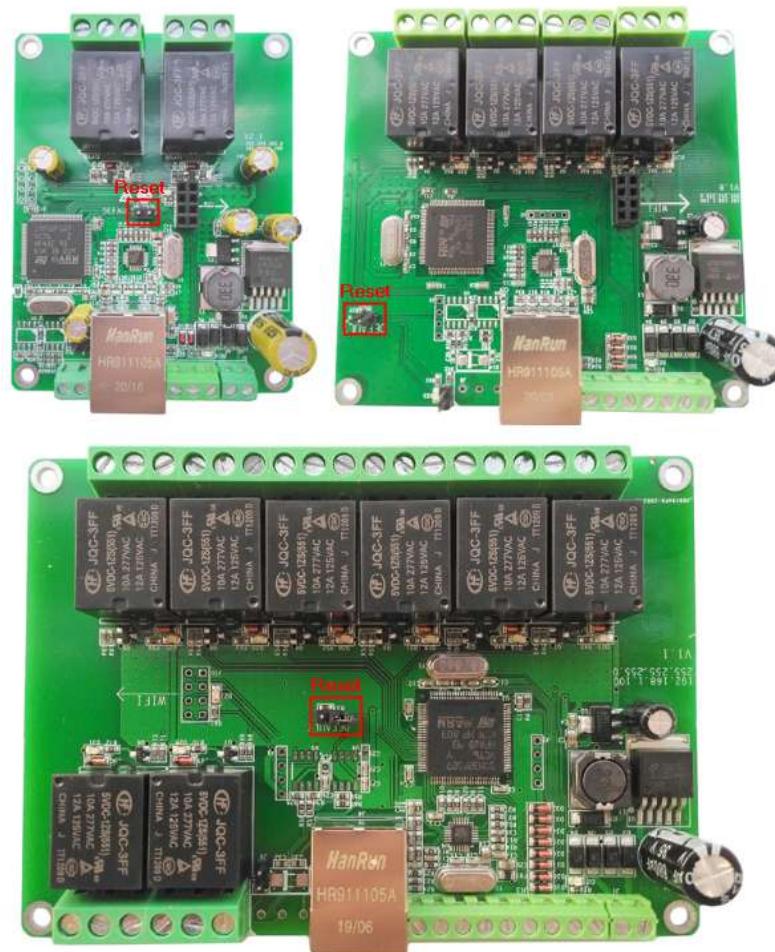
Connect Example:



## 3.4 Reset To Factory

### 3.4.1 Hardware Version <V3.x.x

1. Short-circuit the 2 pin headers under the Default assembly with a jumper cap

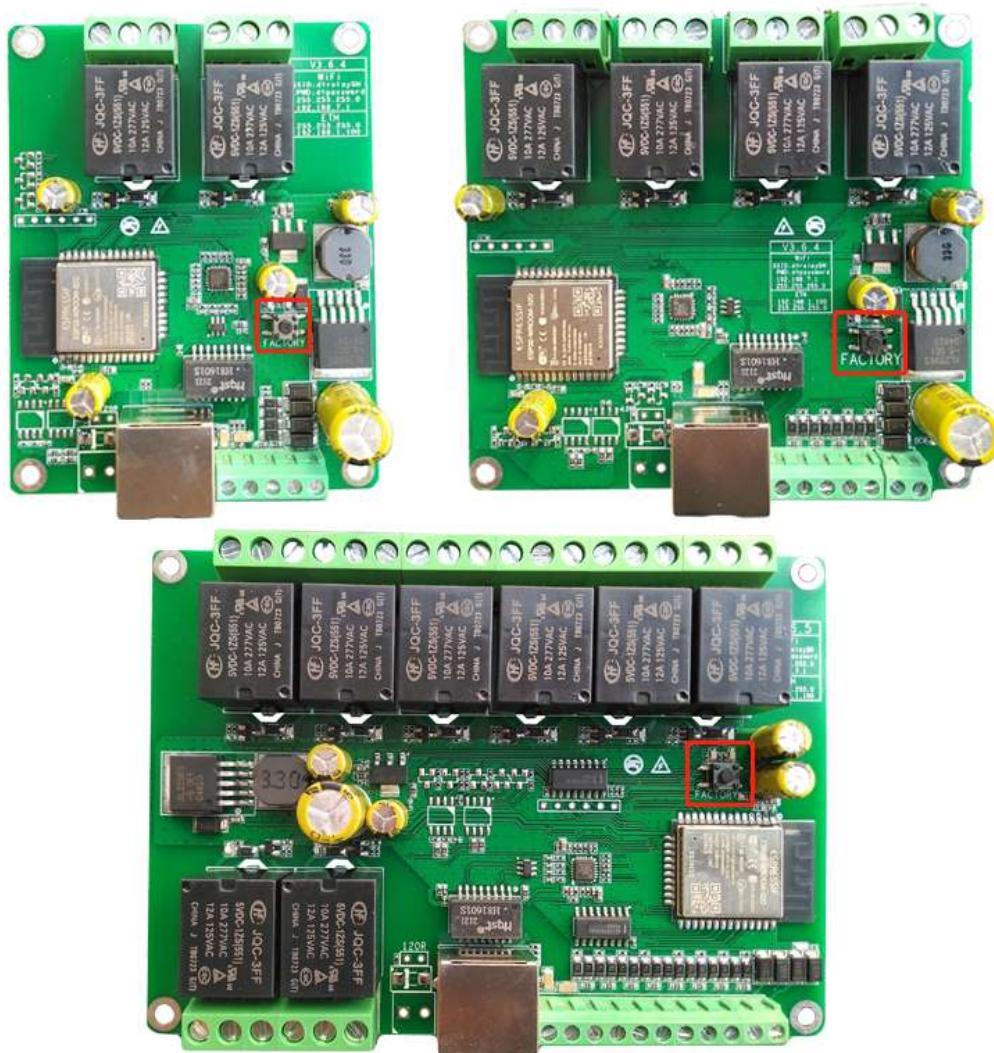


2 Power off the relay board

3 Power on the relay board

4 Pull out the Default jumper cap

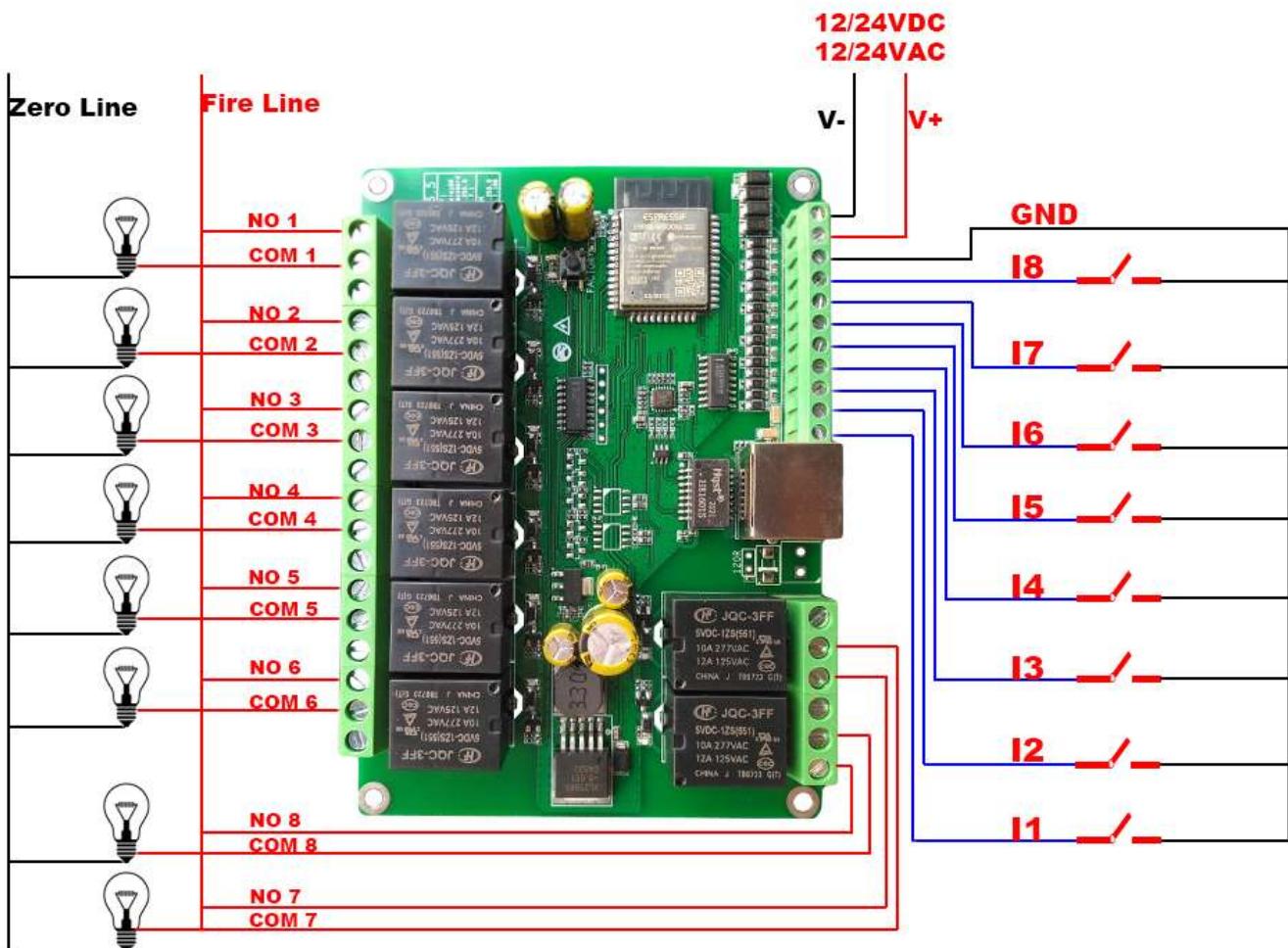
### 3.4.2 Hardware Version >=V3.x.x



- 1 power on relay board,wait 10 second
- 2 press “FACTORY” button(left light will ON)
- 3 wait 5 second(right light will ON)
- 4 release “FACTORY” button
- 5 relay board will reset all parameter to factory.

### 3.5 Input Output and Power wiring diagram

	LOW	HIGH
Hardware Version < V1.8	0V	3.3V
Hardware Version >= V1.8	0V	3.3V~24V

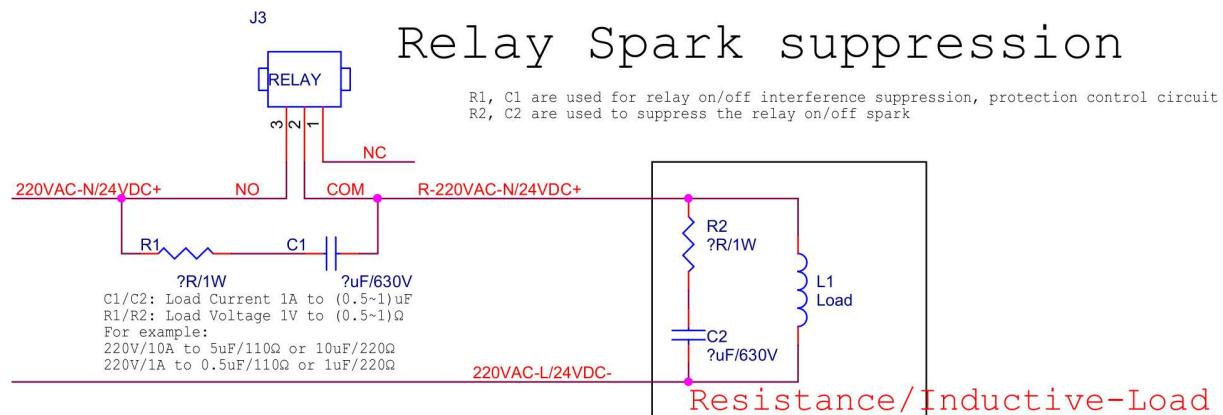


### 3.6 Add Spark killer and contractor

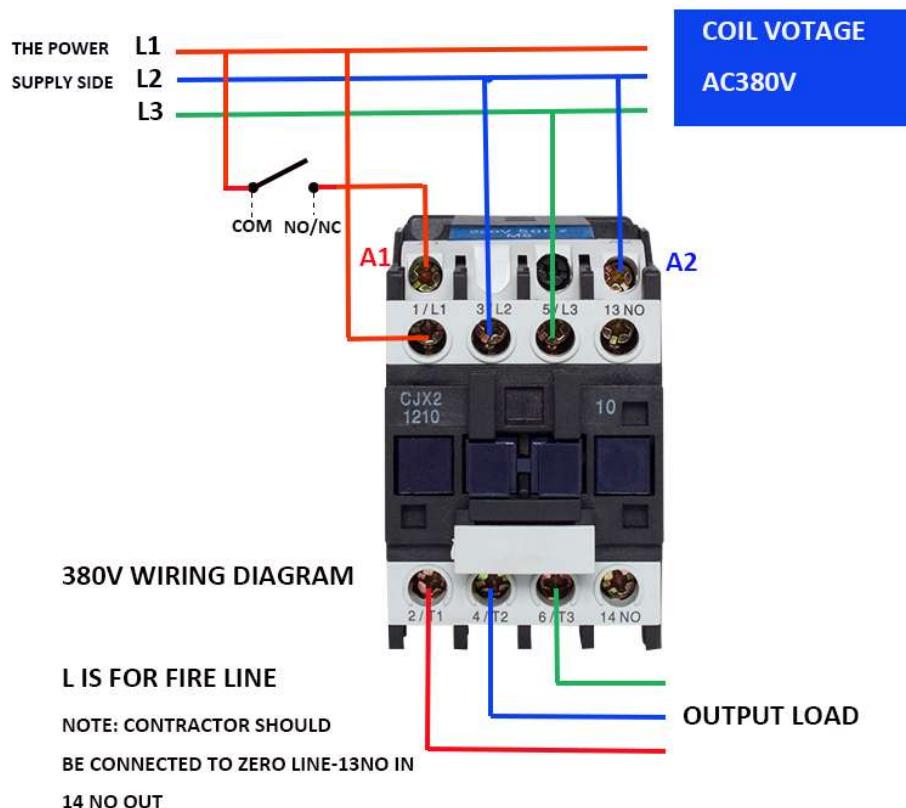
R1,C1 are used for relay on/off interference suppression, protection control circuit

R2,C2 are used to suppress the Load spark and noise when relay ON/OFF

Most of time the Load comes with the best R2+C2, so we don't need care R2 and C2

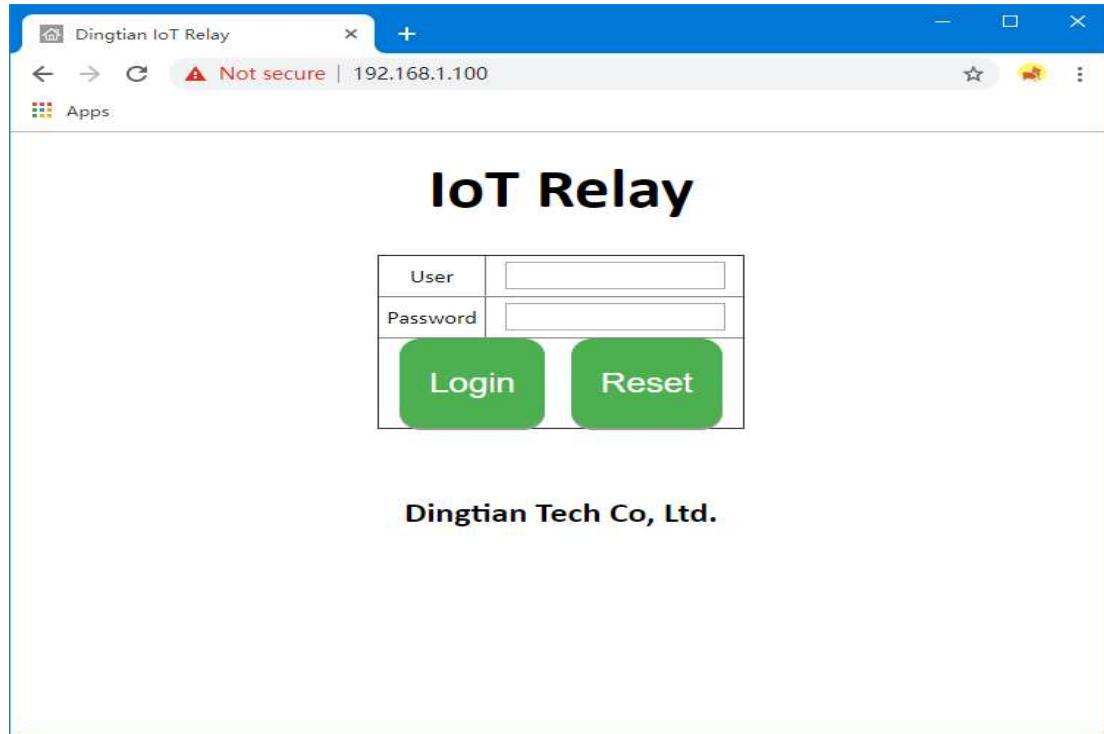


Our max current is 10A, if the current of your device is too big, suggest add a contractor



## 4 Ethernet Web Page

IE is not support, please use firefox and chrome

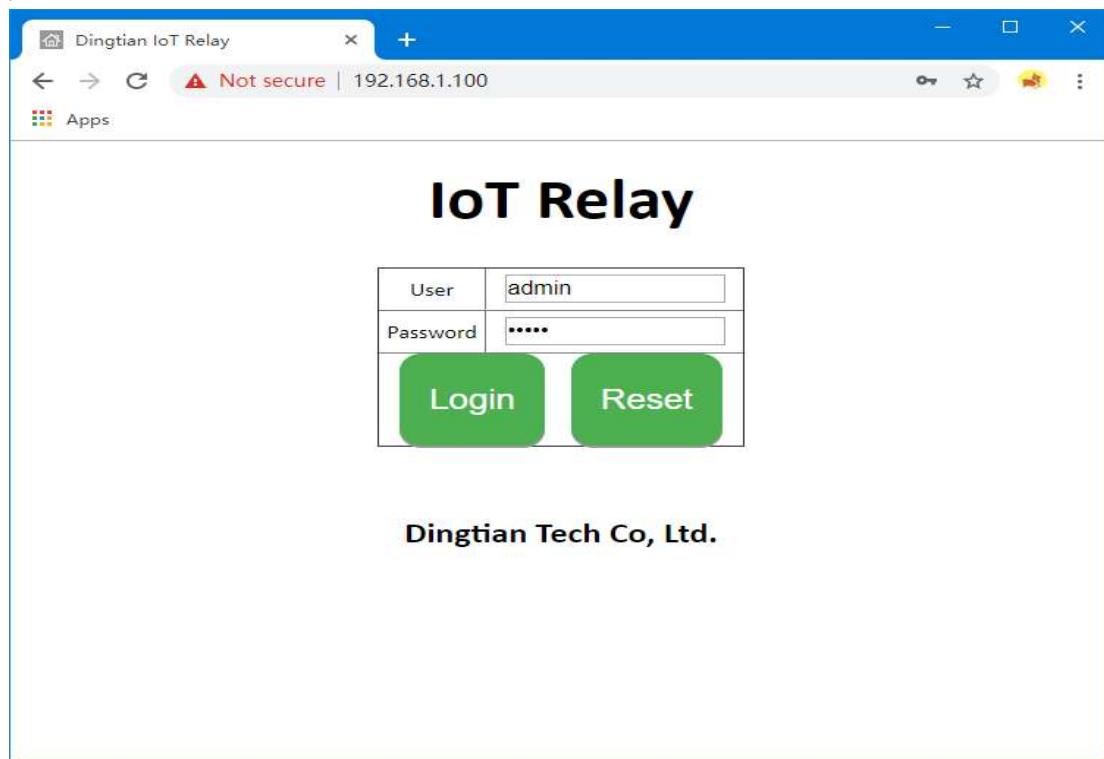


## 4.1 Login

Default IP: 192.168.1.100

user: admin

password: admin



## 4.2 Setting Network

Set network information, NTP Server on Relay setting page  
after click "Save" button, device well reboot

**Parameter:**

**Software Version:** Relay board firmware version

**Model:**

2CH is Dingtian IOT RELAY-2

4CH is Dingtian IOT RELAY-4

8CH is Dingtian IOT RELAY-8

**Serial Number:** Relay board Serial Number

**Date Time:** current date and time(**Need internet because of NTP**)

**NTP Server:** NTP server get time from, suggest use pool.ntp.org

**DHCP:** Ethernet IP DHCP or Static

**IP:** Ethernet current IP Address

**Netmask:** Ethernet current Netmask

**Gateway:** Ethernet current Gateway

**DNS:** Ethernet current DNS Server

## MAC: Ethernet current MAC address

Dingtian IOT Relay

Setting

Hardware Version	V1.4
Software Version	V2.17.28
Build Date	2021-01-21 21:23:13
Model	Dingtian IOT RELAY-8
Serial Number	1868
Date Time	1/28/2021, 23:31:43
NTP Server	pool.ntp.org
Hostname	Dingtian-Relay1868
Hostname+Suffix	Dingtian-Relay
HTTP Server Port	80
DHCP	No
IP	192.168.1.100
Netmask	255.255.255.0
Gateway	192.168.1.1
DNS	192.168.1.1
MAC	bc:34:88:00:06:9d
WiFi AP IP	192.168.7.1
WIFI STA IP	192.168.1.97

Save

## 4.3 Relay Connect

Set control interface parameter of relay board on the Relay connect page and test relay

After click "Save" button, device will reboot

Protocol refers to [programming manual\\_en.pdf](#)

### Channel Parameter:

**RS485:** RS485 protocol, addr, baudrate, databits, stopbits, parity config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU

Modbus-ASCII

Baudrate:

1200bps,2400bps,4800bps,9600bps,19200bps,38400bps,57600bps,115200bps

**CAN:** CAN protocol, ID, Speed config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU(0x03,0x06),only support Read/Write single register once time

Speed:

5Kbps,10Kbps,20Kbps,25Kbps,50Kbps,100Kbps,125Kbps,200Kbps,250Kbps,500Kbps,800Kbps,888 Kbps,1Mbps

**ETH-UDP1:** Ethernet UDP1 protocol, Remote Server Address,Remote Server Port,Local Port config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU Over UDP

Modbus-ASCII Over UDP

Modbus-UDP

CoAP(**need change port to 5683**)

Input Mutual Control

**ETH-UDP2:** Ethernet UDP2 protocol, Remote Server Address,Remote Server Port,Local Port config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU Over UDP(use RS485 addr)

Modbus-ASCII Over UDP(use RS485 addr)

Modbus-UDP

CoAP(**we suggest enable CoAP at ETH/WiFi-UDP2**)

Input Mutual Control

**ETH-TCP Server:** Ethernet TCP Server protocol, Local Port config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU Over TCP(use RS485 addr)

Modbus-ASCII Over TCP(use RS485 addr)

Modbus-TCP

**ETH-TCP Client:** Ethernet TCP Client protocol, Remote Server Address,Remote Server Port config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU Over TCP(use RS485 addr)

Modbus-ASCII Over TCP(use RS485 addr)

Modbus-TCP

**ETH-MQTT:** Ethernet MQTT protocol, Broker Address, Broker Port, Broker Username, Broker

Password config

Protocol:

MQTT(without tls)

**Other Parameter:**

**Relay Password:** use for checking control is valid, only correct password control relay board

**Keep Alive Second:** send relay status to server with every “Keep Alive Second”, **only protocol Dingtian String and Dingtian binary have Keep Alive Second**

**Jogging Time:** Jogging time, default is 500ms, 1=100ms

what is Jogging: ON then delay 500ms OFF, or OFF then delay 500ms ON,

**Power Failure Recovery Relay:** relay status will restore after re-power

**Input Control Relay:** Input link relay output

**Button Type Parameter:**

**Selflock:** Connect **Selflock Button**,

press button relay ON, release button relay OFF

**Jogging:** Connect **Momentary Button**,

press and release button relay Jogging(ON and delay 500ms OFF)

**Momentary:** Connect **Momentary Button**,

press and release button relay ON, press and release button relay OFF

How to Connect button please move to 3.5

The screenshot shows the 'Dingtian IOT Relay' configuration interface. On the left is a sidebar with a 'Setting' menu. The main area is titled 'Relay' and contains several configuration sections:

- Relay Connect:** A table for setting up various communication channels (RS485, CAN, ETH-UDP1, ETH-UDP2, ETH-TCP Server, ETH-TCP Client, ETH-MQTT) with their respective protocols, addresses, and port numbers.
- Other:** Settings for 'Relay Password' (0-9999), 'Keep Alive Second' (30-120 seconds), 'Jogging Time' (5-255 ms), 'Power Failure Recovery Relay' (No/Yes), and 'Input Control Relay' (Yes/No).
- Button Type:** A section for selecting button types for each relay channel.
- Save:** A green 'Save' button.
- Relay Test:** A section with eight green buttons labeled 'Relay1:On', 'Relay2:On', 'Relay3:On', 'Relay4:On', 'Relay5:On', 'Relay6:On', 'Relay7:On', and 'Relay8:On'.

## 4.4 Relay CGI Test

relay CGI test

The screenshot shows the 'Dingtian IOT Relay' web interface. On the left, a sidebar menu includes 'Setting', 'Relay Connect', 'Relay CGI Test' (which is highlighted with a red box), 'Relay Task', 'Input', 'Input Link Relay', 'IP WatchDog', 'Reset User', 'To Factory', and 'Reboot'. The main content area is titled 'Relay CGI Test' and contains a table with 8 rows. Each row has columns for 'Relay' (1-8), 'Status' (On/Off), 'Jogging(1~255 100ms)', 'Delay(1~65535 Second)', 'On/Off', 'Jogging', and 'Delay'. Below the table, a message says 'Relay CGI load success!'. The URL in the browser is 'Not secure | 192.168.1.100'.

## 4.5 Relay Task

Choose "Repeat", you can ask repeat by second/minute/hour/day/week/month

The screenshot shows the 'Dingtian IOT Relay' web interface. The sidebar menu is identical to the previous screenshot. The main content area is titled 'Relay Task' and contains a table with 5 rows. Each row has columns for 'Task', 'Enable', 'Relay Mode', 'On/Off/Delay/Jogging', 'Repeat' (with a dropdown menu showing 'No', 'Second', 'Minute', 'Hour', 'Day', 'Week', and 'Month'), 'Week' (days of the week), and 'Relay task begin time' (a grid for month, day, hour, minute, second, and interval). The URL in the browser is 'Not secure | 192.168.1.100/menu\_page.html'.

## 4.6 Input

## 4.7 Input Link Relay

Select R1~R8, means you add the relay to link with Input, Click the green button R1~R8 means delete relay

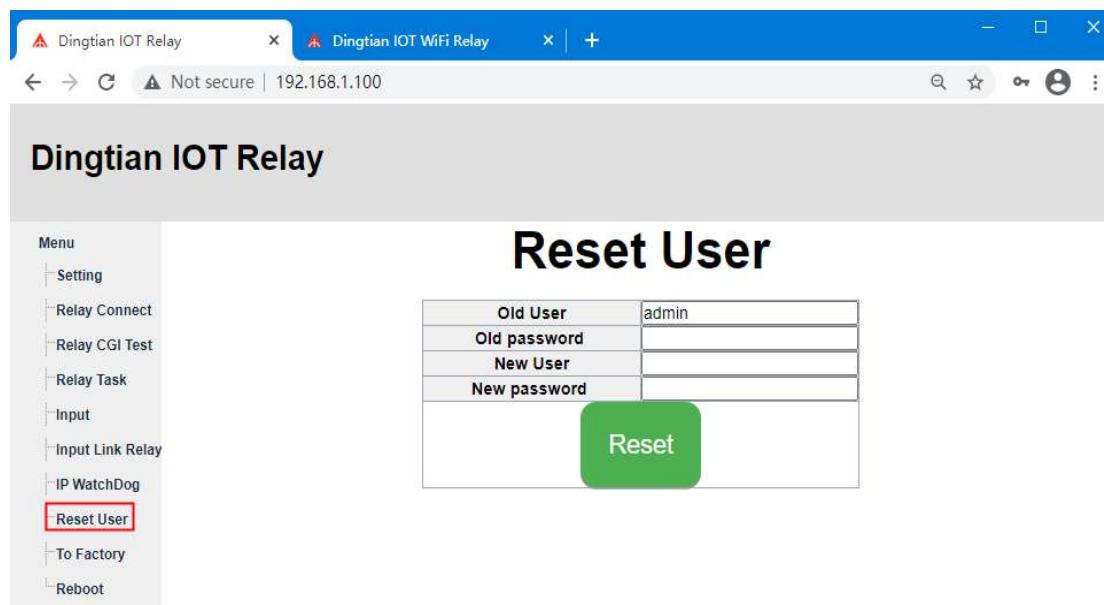
The screenshot shows the 'Input Link Relay' configuration page. On the left is a sidebar menu with options like Setting, Relay Connect, Relay CGI Test, Relay Task, Input, and **Input Link Relay**, which is highlighted with a red box. The main area has a title 'Input Link Relay' and a subtitle 'How to: Select Add/Click Delete'. Below this is a table with 8 rows (I1 to I8) and 5 columns (ON (Action ON), ON (Action OFF), OFF (Action ON), OFF (Action OFF), and a column for selecting relays R1-R8). A large green 'Save' button is at the bottom, and a message 'load success!' is displayed below it.

## 4.8 IP WatchDog

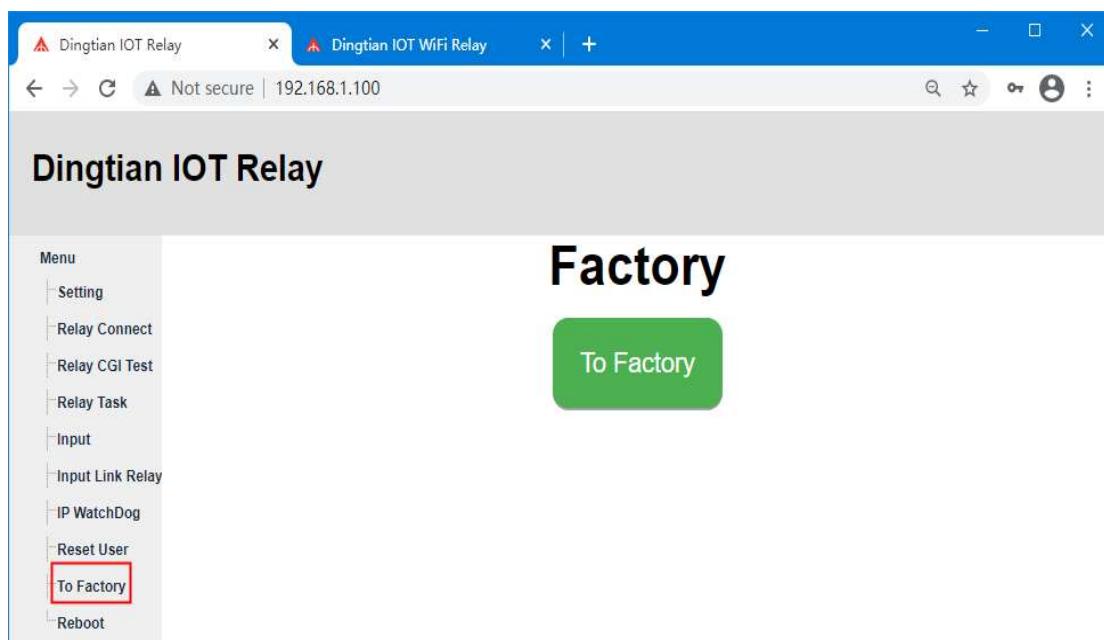
When Enable IP WatchDog function, all relay ON, when the "Watch IP" offline, relay OFF, after seconds, the relay ON automatically, **"Ping Interval" must be bigger than "Ping Timeout"**

The screenshot shows the 'IP WatchDog' configuration page. The sidebar menu includes **IP WatchDog**, which is highlighted with a red box. The main area has a title 'IP WatchDog' and a subtitle 'Off Relay: Select Add/Click Delete' and 'Ping Interval Must Greater than Ping Timeout'. Below this is a table with 9 rows (1 to 9) and columns for WatchDog status, enable/disable, relay selection, Watch IP, and various timeout/ping parameters. A large green 'Save' button is at the bottom, and a message 'load success!' is displayed below it.

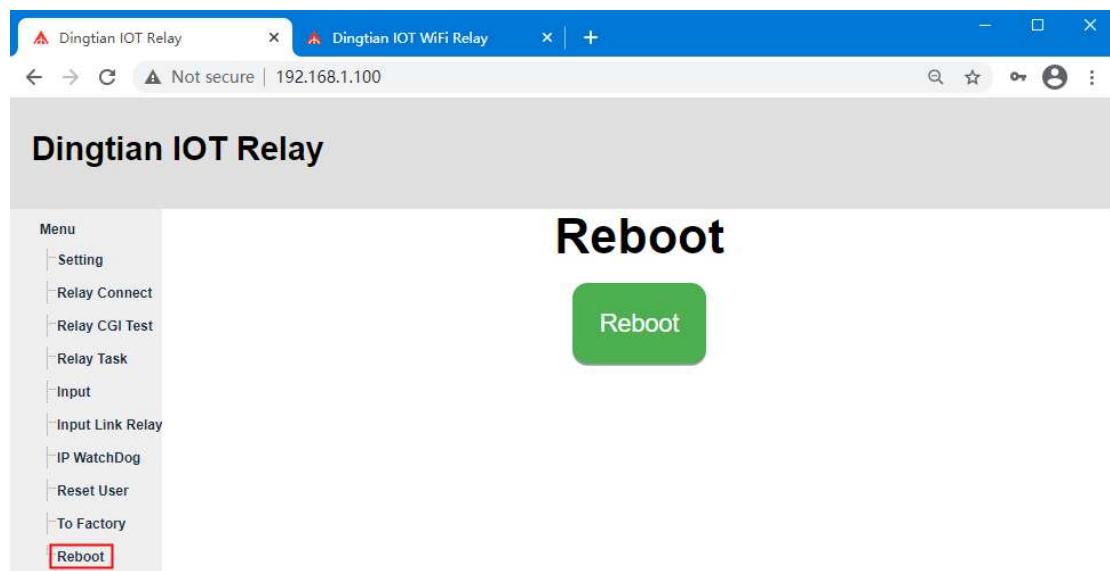
## 4.9 Reset User



## 4.10 To Factory



## 4.11 Reboot



# 5 WIFI web Page

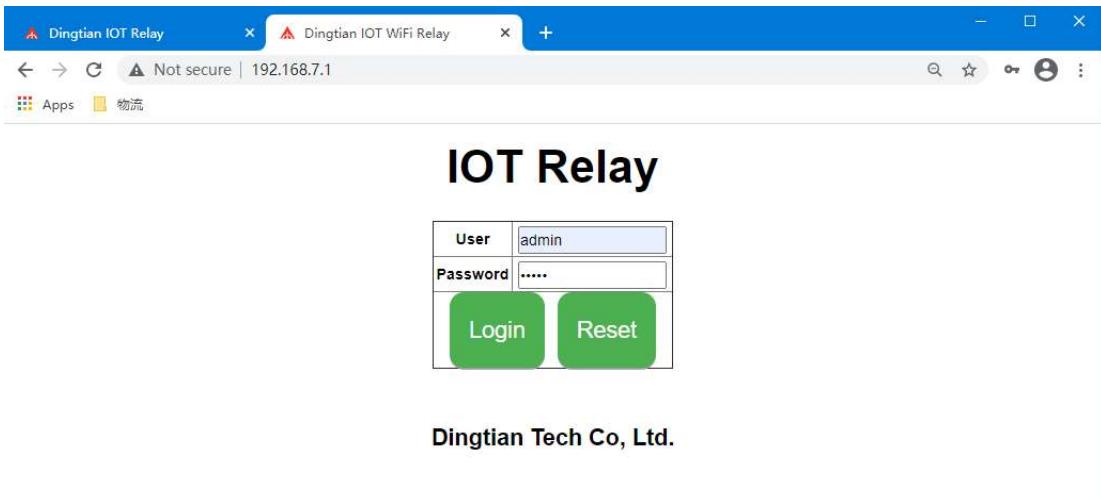
IE is not support, please use firefox and chrome

## 5.1 Login

Default IP: 192.168.7.1

user:admin

password:admin



## 5.2 Setting WIFI

Set WIFI information, NTP Server and STA WiFi SSID and password on WIFI Relay setting page

After click "Save" button, device will reboot

**Parameter:**

**Software Version:** Relay board firmware version

**Model:**

2CH is Dingtian IOT WRELAY-2

4CH is Dingtian IOT WRELAY-4

8CH is Dingtian IOT WRELAY-8

**Serial Number:** Relay board Serial Number

**Date Time:** current date and time(**Need internet because of NTP**)

**NTP Server:** NTP server get time from, suggest use pool.ntp.org

**STA WiFi SSID:** Your Router WiFi Name, Relay board will access to your router

**STA WiFi Password:** Your Router WiFi Password, Relay board will access to your router

**STA IP:** Relay board get IP from your Router

**Netmask:** WIFI Netmask

**Gateway:** WIFI Gateway

**DNS:** WIFI DNS Server

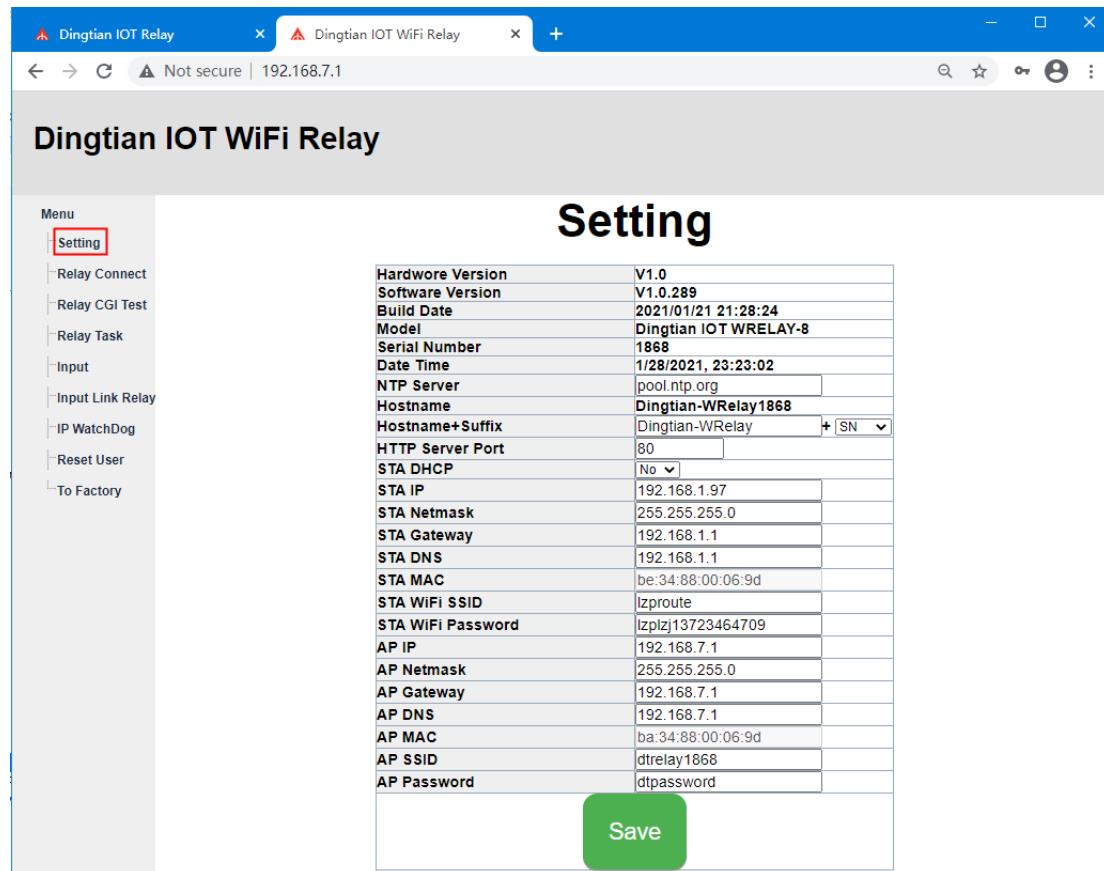
**MAC:** WIFI MAC address

**AP IP:** WIFI default address

**AP SSID:** WIFI default name, as a router, we need to connect the WIFI with your computer firstly and access the wifi web

**AP Password:** WIFI default Password

we can use STA IP or AP IP to control relay board via WIFI, only accept to use one browser(Firefox or Chrome) to access.



## 5.3 Setting Relay Connect

**WIFI-UDP1:** WIFI UDP1 protocol, Remote Server Address,Remote Server Port,Local Port config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU Over UDP(use RS485 addr)

Modbus-ASCII Over UDP(use RS485 addr)

Modbus-UDP

CoAP(**need change port to 5683**)

Input Mutual Control

**WIFI-UDP2:** WIFI UDP2 protocol, Remote Server Address,Remote Server Port,Local Port config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU Over UDP(use RS485 addr)

Modbus-ASCII Over UDP(use RS485 addr)

Modbus-UDP

CoAP(**we suggest enable CoAP at ETH/WiFi-UDP2**)

Input Mutual Control

**WIFI-TCP Server:** WIFI TCP Server protocol, Local Port config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU Over TCP(use RS485 addr)

Modbus-ASCII Over TCP(use RS485 addr)

Modbus-TCP

**WIFI-TCP Client:** WIFI TCP Client protocol, Remote Server Address,Remote Server Port config

Protocol:

Dingtian String

Dingtian Binary

Modbus-RTU Over TCP(use RS485 addr)

Modbus-ASCII Over TCP(use RS485 addr)

Modbus-TCP

**WIFI-MQTT:** WIFI MQTT protocol, Broker Address, Broker Port, Broker Username, Broker Password config

Protocol:

**MQTT(without tls)**

**Other Parameter:**

**Relay Password:** use for checking control is valid, only correct password control relay board

**Keep Alive Second:** send relay status to server with every "Keep Alive Second", **only protocol**

**Dingtian String and Dingtian binary have Keep Alive Second**

**Jogging Time:** Jogging time, default is 500ms,1=100ms

what is Jogging: ON then delay 500ms OFF,or OFF then delay 500ms ON

Dingtian IOT WiFi Relay

Not secure | 192.168.7.1

## Relay

Menu

- Setting
- Relay Connect**
- Relay CGI Test
- Relay Task
- Input
- Input Link Relay
- IP WatchDog
- Reset User
- To Factory

Channel	Protocol	Remote Address	Remote Port	Local Port
WIFI-UDP1	Dingtian Binary	192.168.1.9	60000	60000
WIFI-UDP2	Dingtian String	192.168.1.9	60001	60001
WIFI-TCP Server	Modbus-TCP			Local Port 502
WIFI-TCP Client	Modbus-RTU Over TCP	Remote Address	Remote Port 502	
WIFI-MQTT	MQTT	Broker Address	Broker Port 1883	Broker Username mqtt Broker Password 123

Other		
Relay Password	0	0~9999(0 no password)
Keep Alive Second	30	1~120 second(0 close)
Jogging Time	5	1~255 (1=100ms)

Save

### Relay Test

Relay1:Off      Relay2:Off      Relay3:Off      Relay4:Off  
♦      ♦      ♦      ♦  
Relay5:Off      Relay6:Off      Relay7:Off      Relay8:Off

## 5.4 Relay CGI Test

The screenshot shows a web browser window titled "Dingtian IOT WiFi Relay". The address bar indicates the URL is "Not secure | 192.168.7.1". The left sidebar contains a "Menu" with the following items: Setting, Relay Connect, **Relay CGI Test** (which is highlighted with a red border), Relay Task, Input, Input Link Relay, IP WatchDog, Reset User, and To Factory.

The main content area is titled "Relay CGI Test" and includes a "Relay Password" input field set to "0 (0~9999)". Below this is a table with 8 rows, each representing a relay channel (1 through 8). Each row has columns for "Relay Status" (Off), "Jogging(1~255 100ms)" (dropdown set to On, value 5, 500ms), "Delay(1~65535 Second)" (dropdown set to On, value 5, second), and "On/Off" (dropdown set to On). The last three columns are labeled "Jogging", "Do On", "Do Jogging", "Do Delay", "Do On", "Do Jogging", "Do Delay", and "Do On", "Do Jogging", "Do Delay" respectively. All cells in the "Do" column are green.

At the bottom of the table, a message reads "Relay CGI load success!"

## 5.5 Relay Task

Choose "Repeat", you can ask repeat by second/minute/hour/day/week/month

The screenshot shows the 'Relay Task' configuration page. On the left is a sidebar menu with options like Setting, Relay Connect, Relay CGI Test, Relay Task (which is highlighted with a red box), Input, Input Link Relay, IP WatchDog, Reset User, and To Factory. The main area has a title 'Dingtian IOT WiFi Relay' and a subtitle 'Relay Task'. It contains a table with 6 rows for tasks. Each row has columns for Task ID, Enable, Relay Mode, On/Off/Delay/Jogging, Repeat (with dropdown options: No, Second, Minute, Hour, Day, Week, Month), and a detailed schedule table for Month, Day, Hour, Minute, Second, and Interval. The 'Repeat' column for task 1 is highlighted with a red box.

## 5.6 Input

The screenshot shows the 'Input' configuration page. The sidebar menu includes Setting, Relay Connect, Relay CGI Test, Relay Task, Input (highlighted with a red box), Input Link Relay, IP WatchDog, Reset User, and To Factory. The main area has a title 'Dingtian IOT WiFi Relay' and a subtitle 'Input Test'. It features a table with columns for numbers 1 through 8, each with a dropdown menu labeled 'High'. Below the table, the text 'success!' is displayed. The 'Input' option in the sidebar is highlighted with a red box.

## 5.7 Input Link Relay

Select R1~R8, means you add the relay to link with Input, Click the green button R1~R8 means delete relay

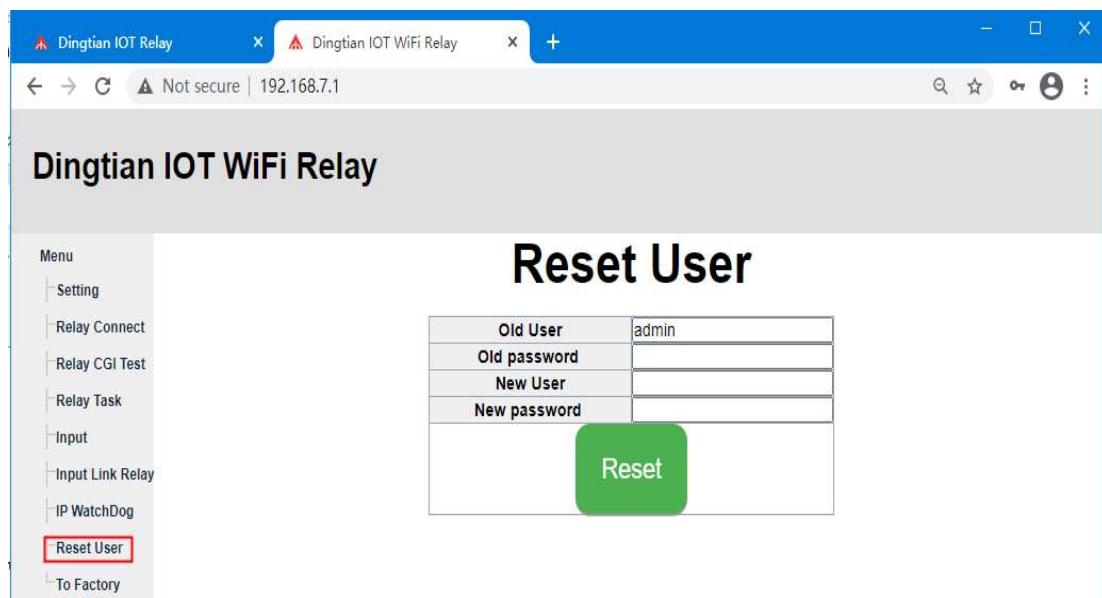
The screenshot shows the 'Input Link Relay' configuration page. On the left, a sidebar menu includes 'Setting', 'Relay Connect', 'Relay CGI Test', 'Relay Task', 'Input', 'Input Link Relay' (which is highlighted with a red box), 'IP WatchDog', 'Reset User', and 'To Factory'. The main area is titled 'Input Link Relay' and contains a table with 18 rows (I1 to I8) and 8 columns (Action ON, R1, Action OFF, R1, Action ON, R1, Action OFF, R1). Below the table is a note: 'How to: Select Add/Click Delete'. A large green 'Save' button is centered at the bottom, and a message 'load success!' is displayed below it.

## 5.8 IP WatchDog

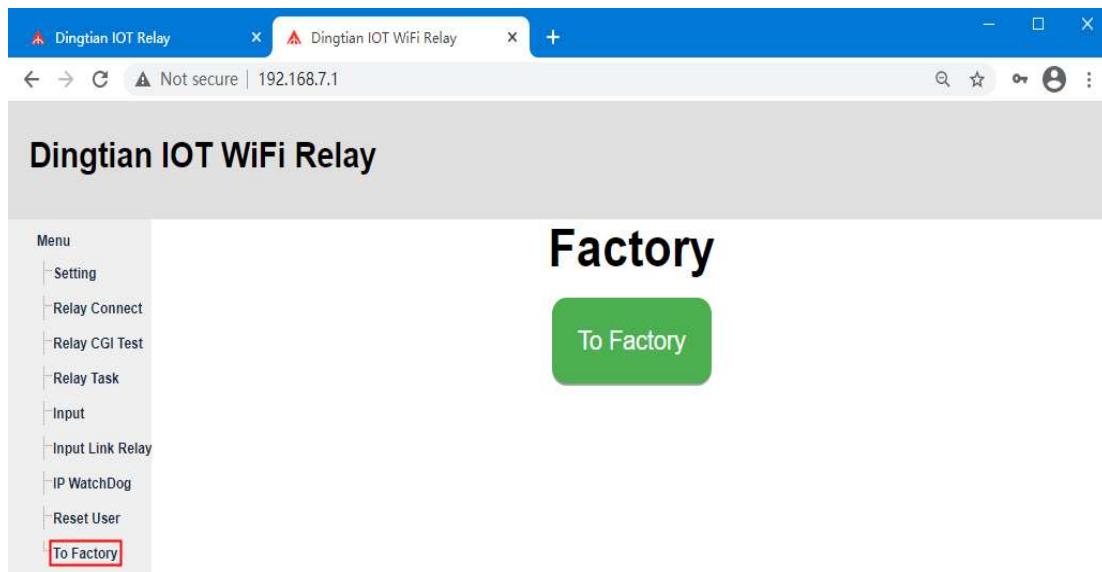
When Enable IP WatchDog function, all relay ON, when the "Watch IP" offline, relay OFF, after seconds, the relay ON automatically, **"Ping Interval"** must be bigger than **"Ping Timeout"**

The screenshot shows the 'IP WatchDog' configuration page. The sidebar menu is identical to the previous page, with 'IP WatchDog' highlighted by a red box. The main area is titled 'IP WatchDog' and contains a table with 9 rows (1 offline to 9 offline) and 13 columns (WatchDog, Enable, Off Relay, Watch IP, Relay, Off, Ping Interval, Ping Timeout, Ping Retry Times, Offline Action Time). A checkbox labeled 'Enable IP WatchDog' is located above the table. Below the table is a note: 'Off Relay: Select Add/Click Delete' and 'Ping Interval Must Greater than Ping Timeout'. A large green 'Save' button is centered at the bottom, and a message 'load success!' is displayed below it.

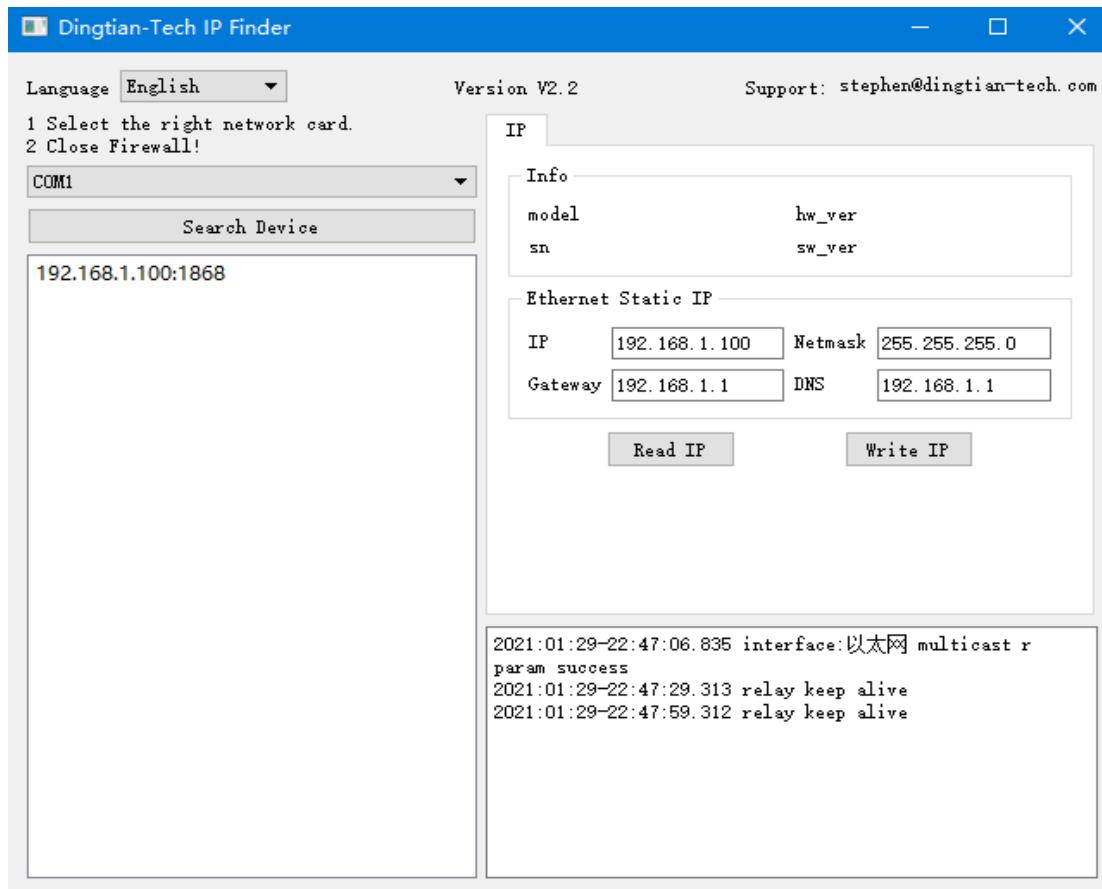
## 5.9 Reset User



## 5.10 To Factory



# 6 IP Finder

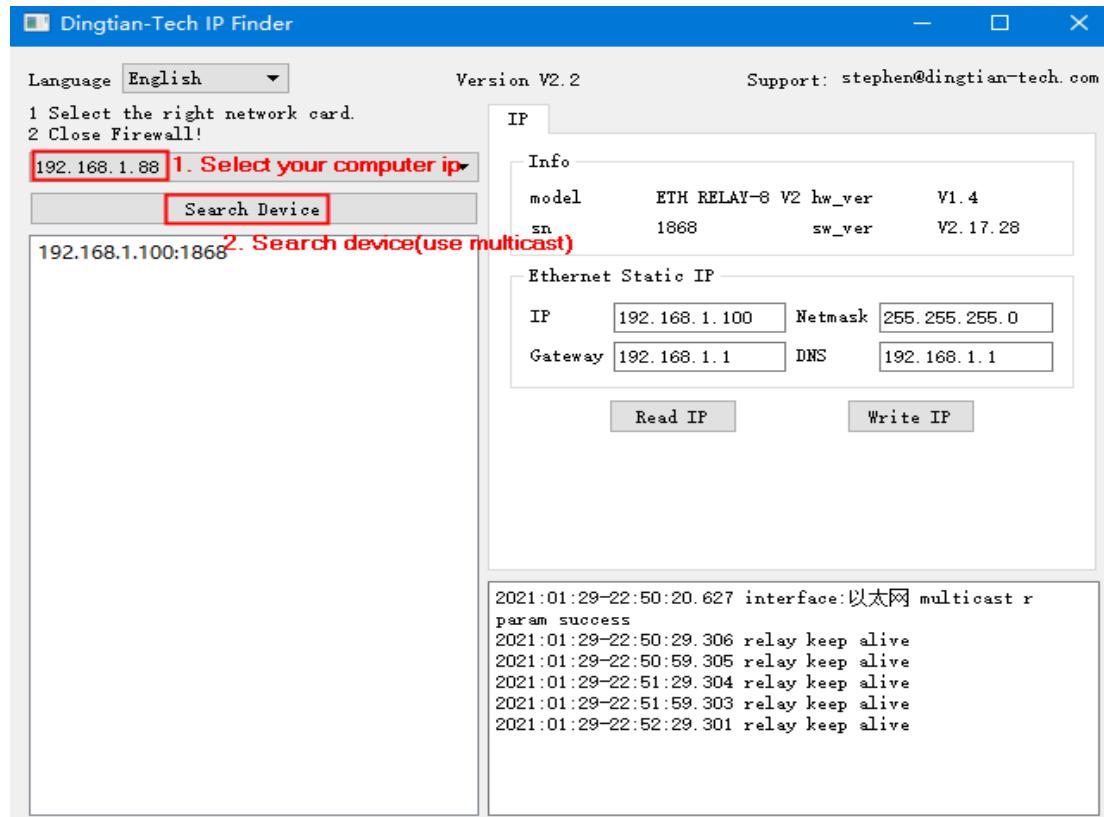


## Notice:

please close all firewall,security software(windows defender/firewall also must close)  
otherwise nothing will be find

## 6.1 Search Device

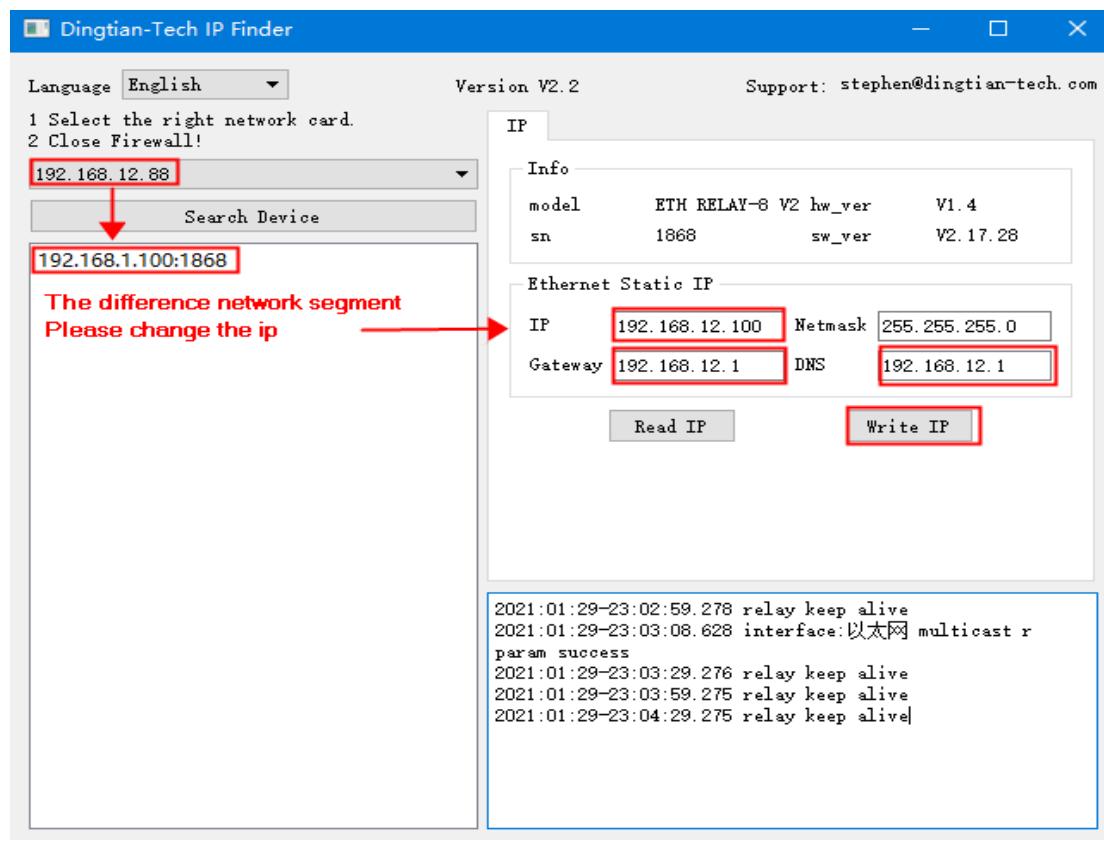
Note: When you use IP Finder to check your relay board ip, please keep your computer just connect with one relay board and the communication of relay board just has one(only Ethernet or WIFI)



Then we can find computer ip is 192.168.1.88, relay board ip is 192.168.1.100

If your computer ip is not the same network segment as relay board, you can change the IP in Ethernet Static IP

## 6.2 Change Static IP



Change Static IP and Click "Write IP", then your relay board ip is 192.168.12.100

# Appendix I How to Test Command

## step 1: download SDK

we can find network tool in SDK

[http://www.dingtian-tech.com/sdk/relay\\_sdk.zip](http://www.dingtian-tech.com/sdk/relay_sdk.zip)

unzip relay\_sdk.zip

network tool name is net\_test

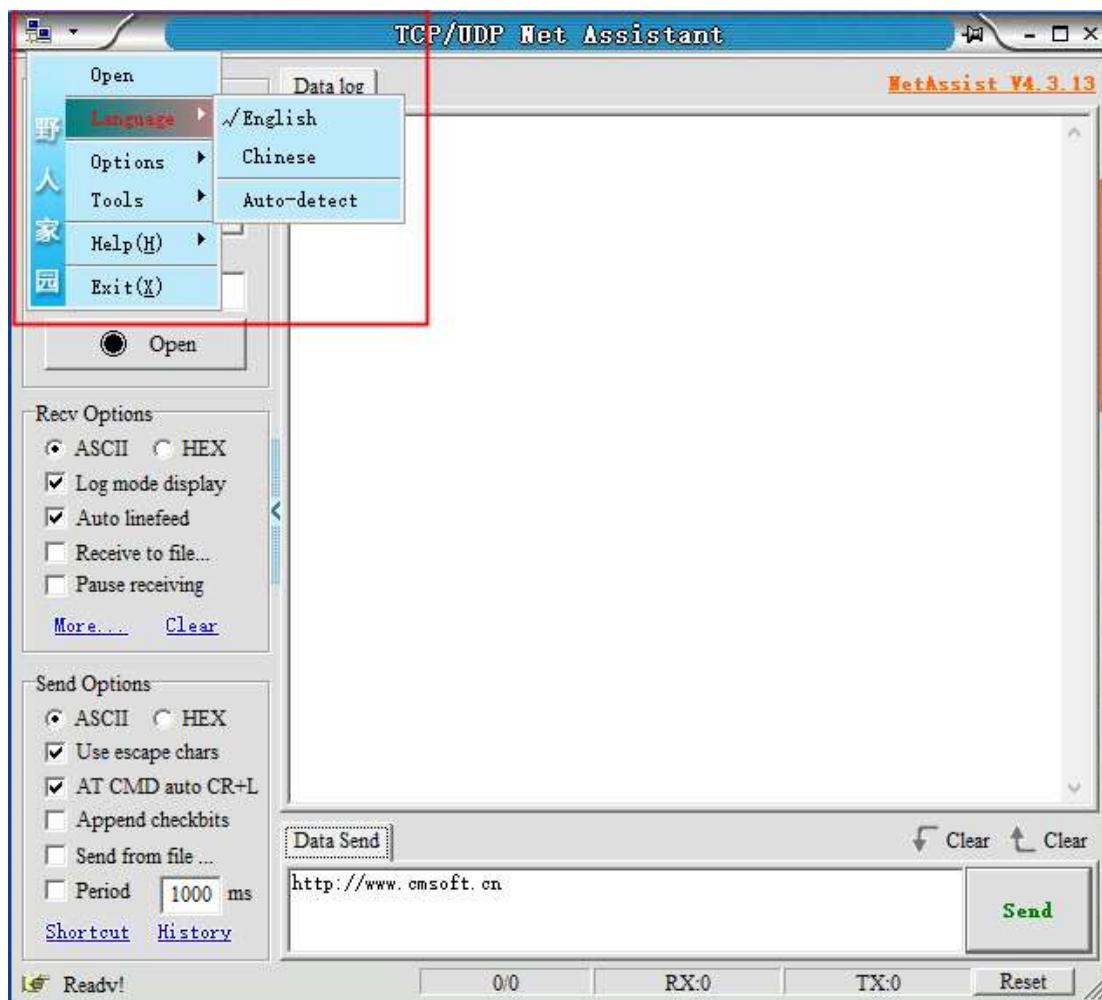
rs485 tool name is rs485\_test

名称	修改日期	类型
net_test	2020/2/10 10:17	文件
rs485_test	2020/2/10 10:17	文件
cgitest_v1_1.exe	2020/2/10 10:12	应用
programing manual_en.pdf	2020/2/8 21:13	PDF
readme.txt	2020/2/10 10:18	文本
relay.sh	2019/9/25 23:48	Shell
relay.sh_how_to.txt	2019/9/25 23:59	文本
relaytool_v2_0.exe	2020/2/8 23:32	应用
user_manual_en.pdf	2020/2/8 21:41	PDF

Access directory "net\_test"

名称
NetAssist.cfg
NetAssist.exe

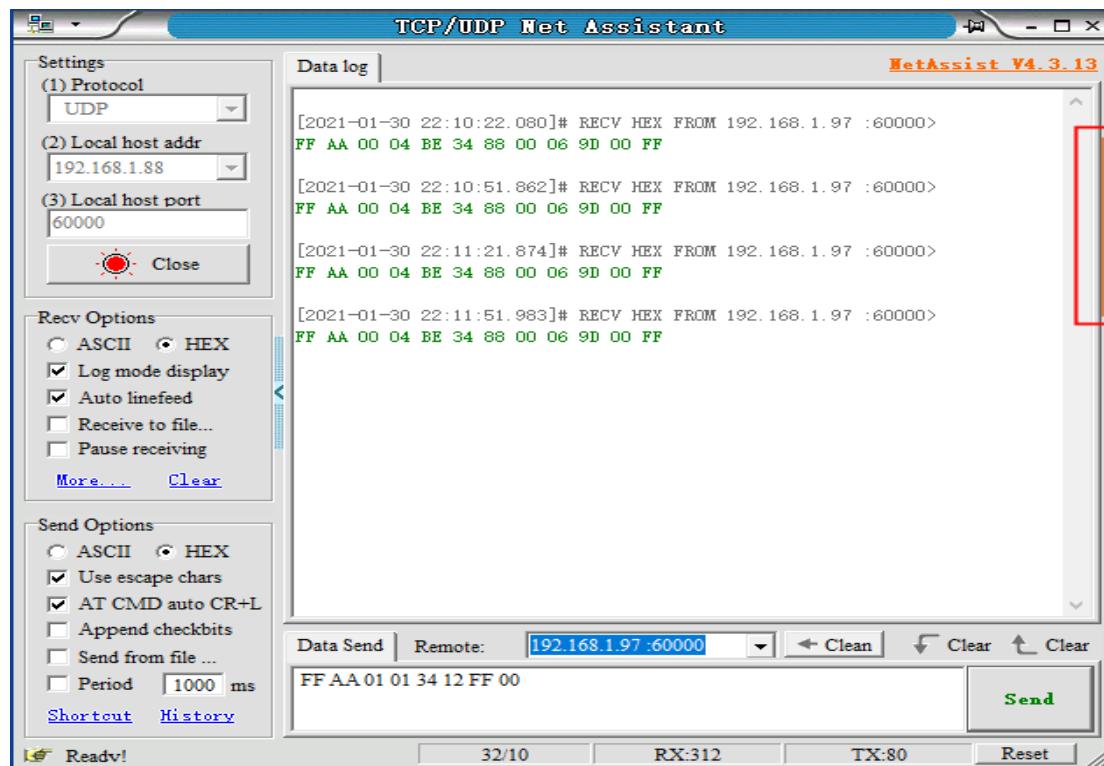
## step 2: Change NetAssist language

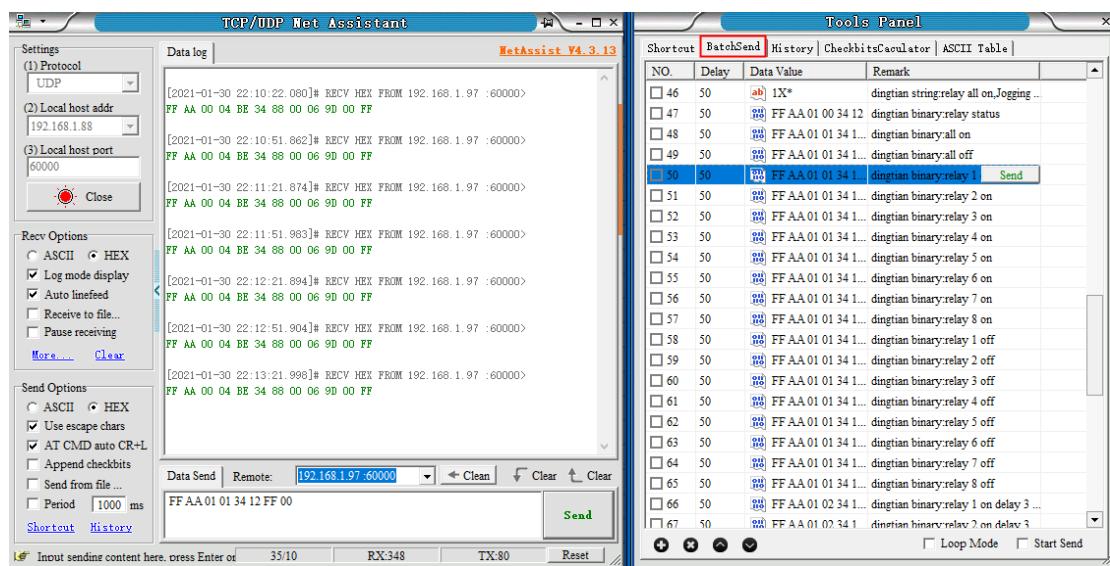
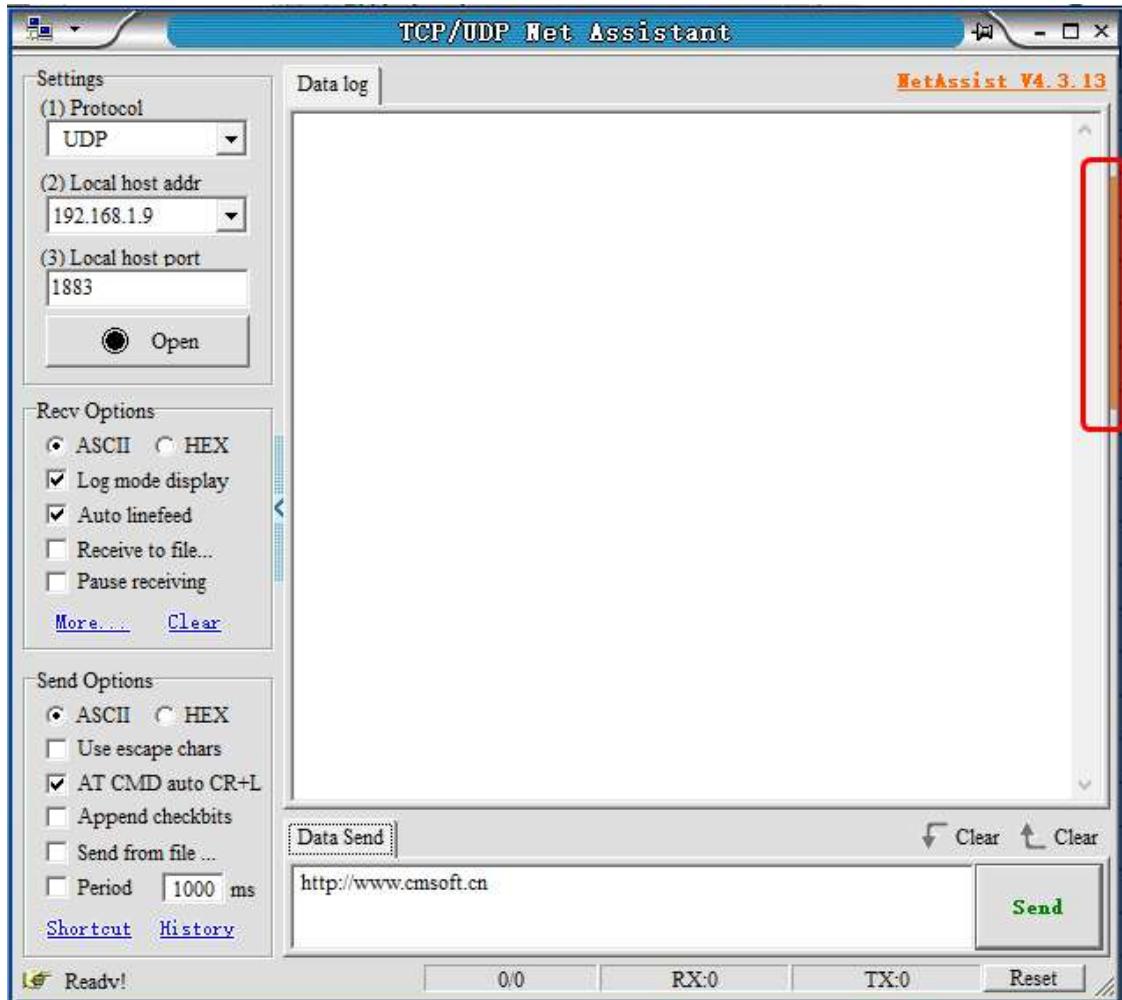


## step 3: Control relay via NetAssist network tool by wifi module

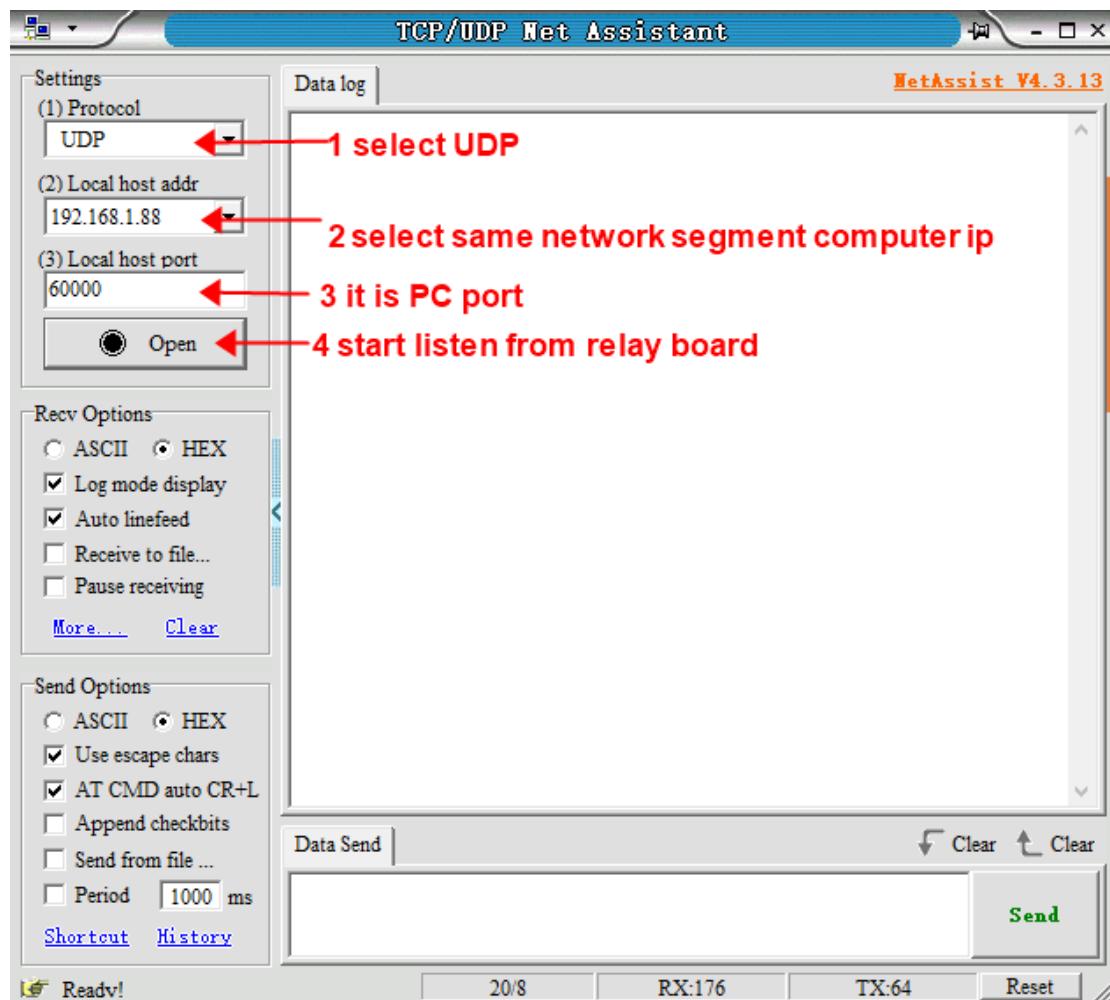
open NetAssist.exe

Shown in red box, open expansion panel

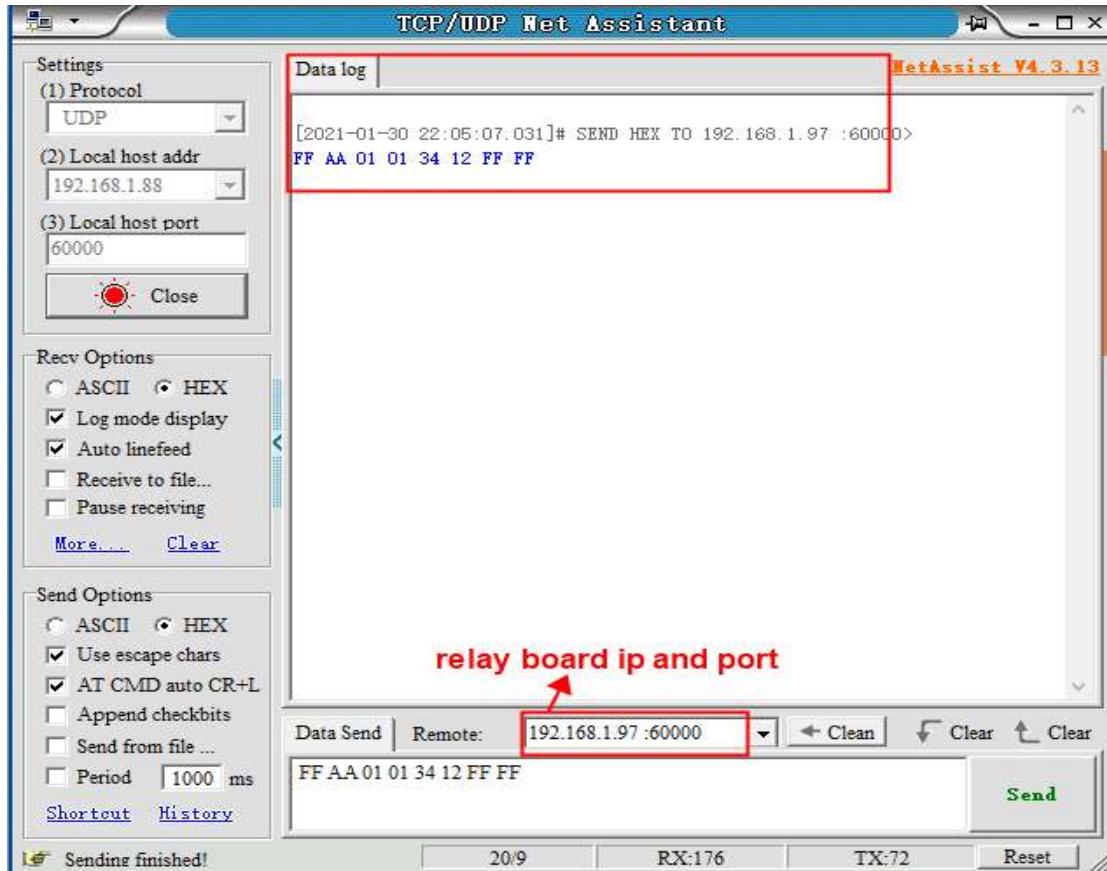




## step 4: open UDP listen.



now relay board send relay status to pc via wifi module

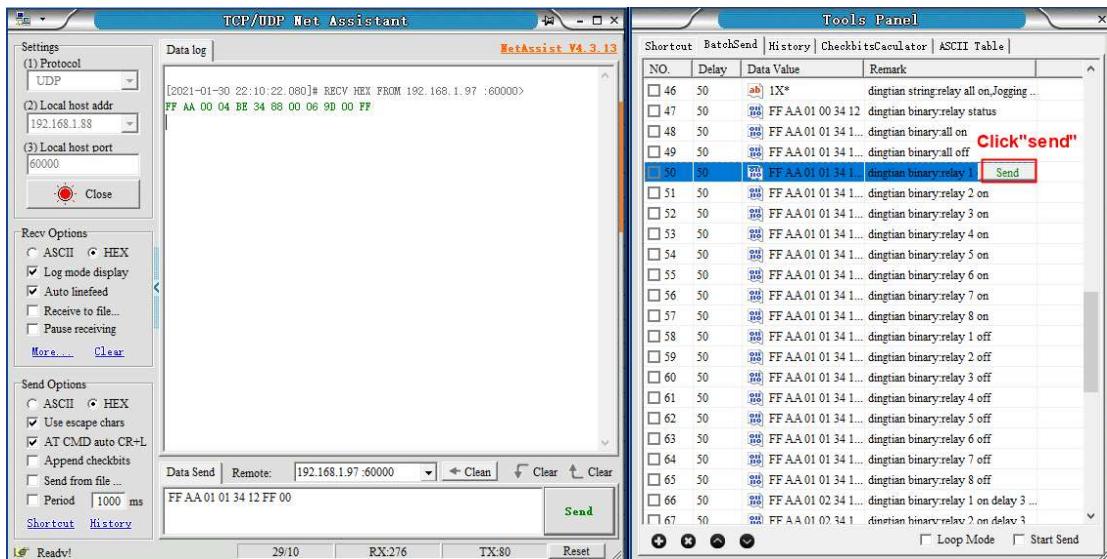


## step 5: control relay via wifi module

NetAssist tool saved preset command

we only need send to relay board via netAssist

like below set relay 1 on



## Appendix II How to use Domoticz

### Notice:

- 1 Close your firewall
- 2 All command and script run as root/administrator
- 3 please step by step

Please install domotiz first

[https://releases.domoticz.com/releases/release/domoticz\\_windows\\_x86.zip](https://releases.domoticz.com/releases/release/domoticz_windows_x86.zip)

### step 1: install Dingtian plugin to Domoticz

Dingtian plugin find in SDK or github

[http://www.dingtian-tech.com/sdk/relay\\_sdk.zip](http://www.dingtian-tech.com/sdk/relay_sdk.zip)

<https://github.com/dtlzp/Domoticz-Dingtian-Relay-Plugin>

#### 1 Stop Domoticz



#### 2 Copy Domoticz\_plugins\dingtian to Domoticz plugin dir

sdk_v1_5 > Domoticz_plugins			
名称	修改日期	类型	
dingtian	2020/4/29 23:44	文件夹	

to Domoticz install dir

Program Files (x86) > Domoticz > plugins			
名称	修改日期	类型	大
dingtian	2020/4/30 9:49	文件夹	

now Dingtian Relay plugin install to Domoticz successfully.

## step 2: config Dingtian Relay board

1 config relay board UDP Server,Remote Port,Local Port,Keep Alive Second and Relay Password (firmware version <= 2.16.xx)

2 config relay board UDP Server, Remote Port,Local Port and Relay Password (firmware version is 2.17.xx)

### Domoticz Ethernet

The screenshot shows the 'Dingtian IOT Relay' configuration interface. On the left, a sidebar lists menu items: Setting, Relay Connect (highlighted with a red box), Relay CGI Test, Relay Task, Input, Input Link Relay, IP WatchDog, Reset User, To Factory, and Reboot.

The main area is titled 'Relay'. It contains a table for configuring various communication channels:

Channel	Protocol	Addr	Baud	Databits	Stopbits	Parity
RS485	Modbus-RTU	1	115200bps	8bit	1bit	None
CAN	Dingtian String	1	125Kbps			

Below the table, there are several configuration sections:

- ETH-UDP1**: Remote Address: 192.168.1.9, Remote Port: 60000, Local Port: 60000 (highlighted with a red box, step 2).
- ETH-UDP2**: Remote Address: 192.168.1.9, Remote Port: 60001, Local Port: 60001.
- ETH-TCP Server**: Modbus-TCP, Domoticz server address: 192.168.1.9, Remote Port: 502.
- ETH-TCP Client**: Modbus-RTU Over TCP, Remote Address: 192.168.1.9, Broker Address: 192.168.1.9, Broker Port: 1883, Broker Username: mqtt, Broker Password: 123.
- ETH-MQTT**: MQTT.

**Other** settings include:

Relay Password	0	0~9999(0 no password)
Keep Alive Second	30	1~120 second(0 close)
Jogging Time	5	1~255 (1=100ms)
Power Failure Recovery Relay	No	
Input Control Relay	Yes	

**Button Type** (checkboxes): Momentary, Momentary, Momentary, Momentary, Momentary, Momentary, Momentary, Momentary.

A large green button labeled **Save** is highlighted with a red box (step 4).

**Relay Test** section:

- Relay1:Off
- Relay2:Off
- Relay3:Off
- Relay4:Off
- Relay5:Off
- Relay6:Off
- Relay7:Off
- Relay8:Off

## Domoticz WIFI

The screenshot shows the 'Dingtian IOT WiFi Relay' configuration interface. On the left sidebar, under the 'Setting' menu, the 'Relay Connect' option is highlighted with a red box and labeled '1'. The main content area is titled 'Relay' and contains a table for configuring relay connections. The table has columns for Channel, Protocol, Remote Address, Remote Port, Local Port, and Local Port. Two rows are highlighted with red boxes: 'WIFI-UDP1' (Protocol: Dingtian Binary, Remote Address: 192.168.1.9, Remote Port: 60000, Local Port: 60000) and 'WIFI-UDP2' (Protocol: Dingtian String, Remote Address: 192.168.1.9, Remote Port: 60001, Local Port: 60001). A red arrow points from the '1' label to the 'Relay Connect' link in the sidebar. A red box labeled '2' is drawn around the two highlighted rows in the table. Below the table is a section titled 'Other' with fields for Relay Password (0), Keep Alive Second (30), and Jogging Time (5). A red box labeled '3' is drawn around these fields. At the bottom center is a green 'Save' button with a red box labeled '4' drawn around it. Below the save button is a 'Relay Test' section with eight green buttons labeled 'Relay1:Off', 'Relay2:Off', 'Relay3:Off', 'Relay4:Off', 'Relay5:Off', 'Relay6:Off', 'Relay7:Off', and 'Relay8:Off'.

Dingtian Relay board web page **Relay Connect**

set **UDP Server, Remote Port, Local Port, Relay Password and Keep Alive Second**(donot need to set for firmware 2.17.xx)

Notice: **UDP Server set to Domoticz Server IP Save config**

## step 3: Add Dingtian Relay to Domoticz

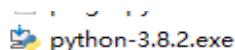
### 1 Install Python 3.8.2

download link:

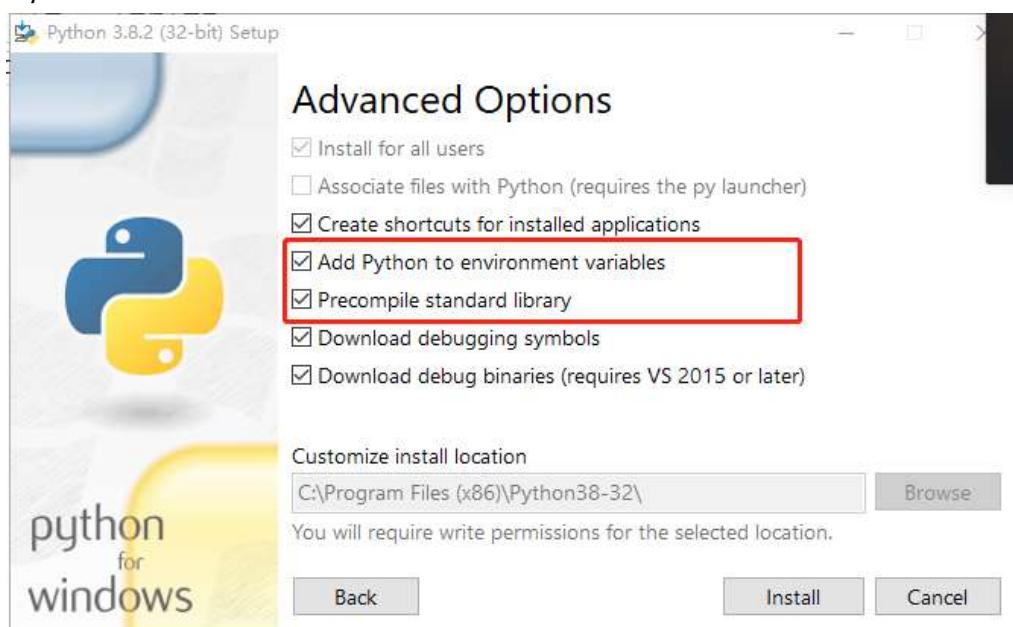
<https://www.python.org/ftp/python/3.8.2/python-3.8.2.exe>

Notice: Domoticz only support 32bit Python

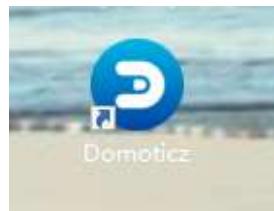
after download, install it



Add Python to environment



### 2 Run to Domoticz



### 3 Add Dingtian Relay to Domoticz

#### 1 Find Hardware Menu

The screenshot shows the Domoticz web interface at the URL <http://127.0.0.1:8080/#/LightSwitches>. The top navigation bar includes links for Dashboard, Switches, Scenes, Temperature, Weather, Utility, and Setup. The Setup link is highlighted with a red box. A sidebar on the right contains links for Hardware, Devices, Settings, Check for Update, More Options, Log, and About. The main content area displays the message "No Lights/Switches found or added in the system...".

#### 2 Input Dingtian Relay config(Ethernet)

The screenshot shows the Domoticz web interface at the URL <http://127.0.0.1:8080/#/Hardware>. The page displays a table with columns for Idx, Name, Enabled, Type, Address, Port, and Data Timeout. A message indicates "No data available in table". Below the table are buttons for Update and Delete. A detailed configuration form is shown for a device named "dingtian-relay":

- Enabled:
- Name: dingtian-relay 1
- Type: Dingtian Relay 2
- Data Timeout: Disabled Specifying a Data Timeout will restart the hardware device if no data is received for the specified time.  
Do not enable this option for devices that do not receive data!
- Wiki URL: <https://github.com/dtzp/Domoticz-Dingtian-Relay-Plugin>
- Product URL: [https://www.dingtian-tech/en\\_us/product.html?tab=relay](https://www.dingtian-tech/en_us/product.html?tab=relay)
- IP Address: 192.168.1.100 3
- Port: 60001 4
- Channel Count: 8 5
- Password: 0 6
- Debug: False 7

At the bottom of the configuration form is a blue "Add" button with the number "8" next to it.

### 3. Input Dingtian Relay config(WIFI)

The screenshot shows the Domoticz web interface at <http://127.0.0.1:8080/#/Hardware>. The top navigation bar includes links for Dashboard, Switches, Scenes, Temperature, Weather, Utility, and Setup. The main content area displays a table for hardware devices. A message at the top states "No data available in table". Below the table, there are buttons for "Update" and "Delete". The configuration form for a "Dingtian Relay" device is shown, with the following fields filled:

- Enabled:
- Name: dingtian-relay 1
- Type: Dingtian Relay 2
- Data Timeout: Disabled 3  
Specifying a Data Timeout will restart the hardware device if no data is received for the specified time.  
Do not enable this option for devices that do not receive data!
- Wiki URL: <https://github.com/dtlzp/Domoticz-Dingtian-Relay-Plugin>
- Product URL: [https://www.dingtian-tech/en\\_us/product.html?tab=relay](https://www.dingtian-tech/en_us/product.html?tab=relay)
- IP Address: 192.168.1.97 4
- Port: 60001 5
- Channel Count: 8 6
- Password: 0 7
- Debug: False 8

At the bottom right of the configuration form is a blue "Add" button.

Type, IP Address, Port, Channel Count, Password must correct,

Password is 1 config relay board UDP Server, Remote Port, Local Port, Keep Alive Second and Relay Password

now check parameters is ok,

click "**Add**" to save

Now you can find Hardware and Relay

The screenshot shows the Domoticz web interface at <http://127.0.0.1:8080/#/Hardware>. The top navigation bar includes links for Dashboard, Switches, Scenes, Temperature, Weather, Utility, and Setup. The main content area displays a table for hardware devices. The table shows two entries:

Idx	Name	Enabled	Type	Address	Port	Data Timeout
3	dingtian-relay	Yes	Dingtian Relay	192.168.1.100	Ethernet	Disabled
2	dingtian-relay	Yes	Dingtian Relay	192.168.1.97	WIFI	Disabled

Below the table, there are buttons for "Update" and "Delete". The configuration form for a "Dingtian Relay" device is shown, with the following fields filled:

- Enabled:
- Name: dingtian-relay
- Type: Dingtian Relay
- Data Timeout: Disabled  
Specifying a Data Timeout will restart the hardware device if no data is received for the specified time.  
Do not enable this option for devices that do not receive data!
- Wiki URL: <https://github.com/dtlzp/Domoticz-Dingtian-Relay-Plugin>
- Product URL: [https://www.dingtian-tech/en\\_us/product.html?tab=relay](https://www.dingtian-tech/en_us/product.html?tab=relay)
- IP Address: 192.168.1.100
- Port: 60001
- Channel Count: 8
- Password: 0
- Debug: False

At the bottom right of the configuration form is a blue "Add" button.

## 4 Multiple Relay board Add to Domoticz

Domoticz Need 2 UDP port for each Relay board

default is: 60000 and 60001

you can add multiple with difference UDP port like:

60002 and 60003

60004 and 60005

60006 and 60007

below is example 60002 and 60003

Enabled:

Name: eth2-r8

Type: Dingtian Relay

Data Timeout: Disabled

Specifying a Data Timeout will restart the hardware device if no data is received for the specified time.  
Do not enable this option for devices that do not receive data!

Wiki URL: <https://github.com/dtlzp/Domoticz-Dingtian-Relay-Plugin>

Product URL: [https://www.dingtian-tech/en\\_us/product.html?tab=relay](https://www.dingtian-tech/en_us/product.html?tab=relay)

Dingtian-tech Relay Domoticz Plugin.

IP Address: 192.168.1.100

Port: **60003**

Channel Count: 8

Password: 0

Debug: False

Add

## Relay

Channel	Protocol	Addr	Baud	Databits	Stopbits	Parity
RS485	Modbus-RTU	1	115200bps	8bit	1bit	None
CAN	Dingtian String	1	125Kbps			
ETH-UDP1	Dingtian Binary	192.168.1.88		Remote Port	Local Port	
ETH-UDP2	Dingtian String	192.168.1.88		Remote Port	Local Port	
ETH-TCP Server	Modbus-TCP				Local Port	
ETH-TCP Client	Modbus-RTU Over TCP	192.168.1.9		Remote Port		
ETH-MQTT	MQTT	Broker Address 192.168.1.88		Broker Port 1883	Broker Username mqtt	Broker Password 123

## 5 Add Relay to Switches Page

→ C ① 127.0.0.1:8080/#/Devices

用

	Idx	Hardware	ID	Unit	Name	Type	SubType	Data	Last Seen
<input type="checkbox"/>	7	dingtian-relay	00020007	7	dingtian-relay - RELAY7	Light/Switch	Switch	Off	2020-04-30 10:26:14
<input type="checkbox"/>	8	dingtian-relay	00020008	8	dingtian-relay - RELAY8	Light/Switch	Switch	Off	2020-04-30 10:26:14
<input type="checkbox"/>	2	dingtian-relay	00020002	2	dingtian-relay - RELAY2	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input type="checkbox"/>	3	dingtian-relay	00020003	3	dingtian-relay - RELAY3	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input type="checkbox"/>	4	dingtian-relay	00020004	4	dingtian-relay - RELAY4	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input type="checkbox"/>	5	dingtian-relay	00020005	5	dingtian-relay - RELAY5	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input type="checkbox"/>	6	dingtian-relay	00020006	6	dingtian-relay - RELAY6	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input type="checkbox"/>	1	dingtian-relay	00020001	1	dingtian-relay - RELAY1	Light/Switch	Switch	Off	2020-04-30 10:26:12

Show 1 to 8 of 8 entries

First Previous 1 Next Last

Click Add Device to use Relay

→ C ① 127.0.0.1:8080/#/Devices

用

	Idx	Hardware	ID	Unit	Name	Type	SubType	Data	Last Seen
<input checked="" type="checkbox"/>	7	dingtian-relay	00020007	7	dingtian-relay - RELAY7	Light/Switch	Switch	Off	2020-04-30 10:26:14
<input checked="" type="checkbox"/>	8	dingtian-relay	00020008	8	dingtian-relay - RELAY8	Light/Switch	Switch	Off	2020-04-30 10:26:14
<input checked="" type="checkbox"/>	2	dingtian-relay	00020002	2	dingtian-relay - RELAY2	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input checked="" type="checkbox"/>	3	dingtian-relay	00020003	3	dingtian-relay - RELAY3	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input checked="" type="checkbox"/>	4	dingtian-relay	00020004	4	dingtian-relay - RELAY4	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input checked="" type="checkbox"/>	5	dingtian-relay	00020005	5	dingtian-relay - RELAY5	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input checked="" type="checkbox"/>	6	dingtian-relay	00020006	6	dingtian-relay - RELAY6	Light/Switch	Switch	Off	2020-04-30 10:26:13
<input checked="" type="checkbox"/>	1	dingtian-relay	00020001	1	dingtian-relay - RELAY1	Light/Switch	Switch	Off	2020-04-30 10:26:12

Show 1 to 8 of 8 entries

First Previous 1 Next Last

Click Add Device to confirm

→ C 127.0.0.1:8080/#/Devices

应用

Domoticz 2020.2

All Devices Not Used Refresh

Show 25 entries

Add Device

Name: dingtian-relay - RELAY7

As:  Main Device  Sub/Slave Device

Add Device Cancel

Idx	Hardware	ID	Unit	Name	Type	SubType	Data	Ull	Last Seen
7	dingtian-relay	00020007	7	dingtian-relay - RELAY7	Light/Switch	Switch	Off	-	2020-04-30 10:26:14
8	dingtian-relay	00020008	8	dingtian-relay - RELAY8	Light/Switch	Switch	Off	-	2020-04-30 10:26:14
2	dingtian-relay	00020002	2	dingtian-relay - RELAY2	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
3	dingtian-relay	00020003	3	dingtian-relay - RELAY3	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
4	dingtian-relay	00020004	4	dingtian-relay - RELAY4	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
5	dingtian-relay	00020005	5	dingtian-relay - RELAY5	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
6	dingtian-relay	00020006	6	dingtian-relay - RELAY6	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
1	dingtian-relay	00020001	1	dingtian-relay - RELAY1	Light/Switch	Switch	Off	-	2020-04-30 10:26:12

Showing 1 to 8 of 8 entries First Previous 1 Next Last

result

→ C 127.0.0.1:8080/#/Devices

应用

Domoticz 2020.2

All Devices Not Used Refresh

Show 25 entries

Idx	Hardware	ID	Unit	Name	Type	SubType	Data	Ull	Last Seen
7	dingtian-relay	00020007	7	dingtian-relay - RELAY7	Light/Switch	Switch	Off	-	2020-04-30 10:26:14
8	dingtian-relay	00020008	8	dingtian-relay - RELAY8	Light/Switch	Switch	Off	-	2020-04-30 10:26:14
2	dingtian-relay	00020002	2	dingtian-relay - RELAY2	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
3	dingtian-relay	00020003	3	dingtian-relay - RELAY3	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
4	dingtian-relay	00020004	4	dingtian-relay - RELAY4	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
5	dingtian-relay	00020005	5	dingtian-relay - RELAY5	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
6	dingtian-relay	00020006	6	dingtian-relay - RELAY6	Light/Switch	Switch	Off	-	2020-04-30 10:26:13
1	dingtian-relay	00020001	1	dingtian-relay - RELAY1	Light/Switch	Switch	Off	-	2020-04-30 10:26:12

Showing 1 to 8 of 8 entries First Previous 1 Next Last

## 4 Control Dingtian Relay with Domoticz

Switch “**Switches**” page

C ⓘ 127.0.0.1:8080/#/LightSwitches

The screenshot shows the Domoticz interface with the 'Switches' tab selected. There are eight relay controls listed:

- dingtian-relay - RELAY1: Off. Last Seen: 2020-04-30 10:26:12. Type: Light/Switch, Switch, On/Off.
- dingtian-relay - RELAY2: Off. Last Seen: 2020-04-30 10:26:13. Type: Light/Switch, Switch, On/Off.
- dingtian-relay - RELAY3: Off. Last Seen: 2020-04-30 10:26:13. Type: Light/Switch, Switch, On/Off.
- dingtian-relay - RELAY4: Off. Last Seen: 2020-04-30 10:26:13. Type: Light/Switch, Switch, On/Off.
- dingtian-relay - RELAY5: Off. Last Seen: 2020-04-30 10:26:13. Type: Light/Switch, Switch, On/Off.
- dingtian-relay - RELAY6: Off. Last Seen: 2020-04-30 10:26:13. Type: Light/Switch, Switch, On/Off.
- dingtian-relay - RELAY7: Off. Last Seen: 2020-04-30 10:26:14. Type: Light/Switch, Switch, On/Off.
- dingtian-relay - RELAY8: Off. Last Seen: 2020-04-30 10:26:14. Type: Light/Switch, Switch, On/Off.

Each relay card has a lightbulb icon, a status indicator (Off), last seen timestamp, type information, and four buttons: Log, Edit, Timers, and Notifications.

Click light icon to control relay

C ⓘ 127.0.0.1:8080/#/LightSwitches

The screenshot shows the same Domoticz 'Switches' page as before, but the first relay (RELAY1) now has a red box around its lightbulb icon. This indicates that the 'Turn On' action has been performed for this specific relay.

C 127.0.0.1:8080/#/LightSwitches

Domoticz 2020.2

2020-04-30 10:37:40 ★▲05.52 ▼18:50

◀ Manual Light/Switch Learn Light/Switch ▶

dingtian-relay - RELAY1	On
Last Seen: 2020-04-30 10:37:36	Type: Light/Switch, Switch, On/Off
	Log  Timers

dingtian-relay - RELAY2	Off
Last Seen: 2020-04-30 10:26:13	Type: Light/Switch, Switch, On/Off
	Log  Timers

dingtian-relay - RELAY3	Off
Last Seen: 2020-04-30 10:26:13	Type: Light/Switch, Switch, On/Off
	Log  Timers

dingtian-relay - RELAY4	Off
Last Seen: 2020-04-30 10:26:13	Type: Light/Switch, Switch, On/Off
	Log  Timers

dingtian-relay - RELAY5	Off
Last Seen: 2020-04-30 10:26:13	Type: Light/Switch, Switch, On/Off
	Log  Timers

dingtian-relay - RELAY6	Off
Last Seen: 2020-04-30 10:26:13	Type: Light/Switch, Switch, On/Off
	Log  Timers

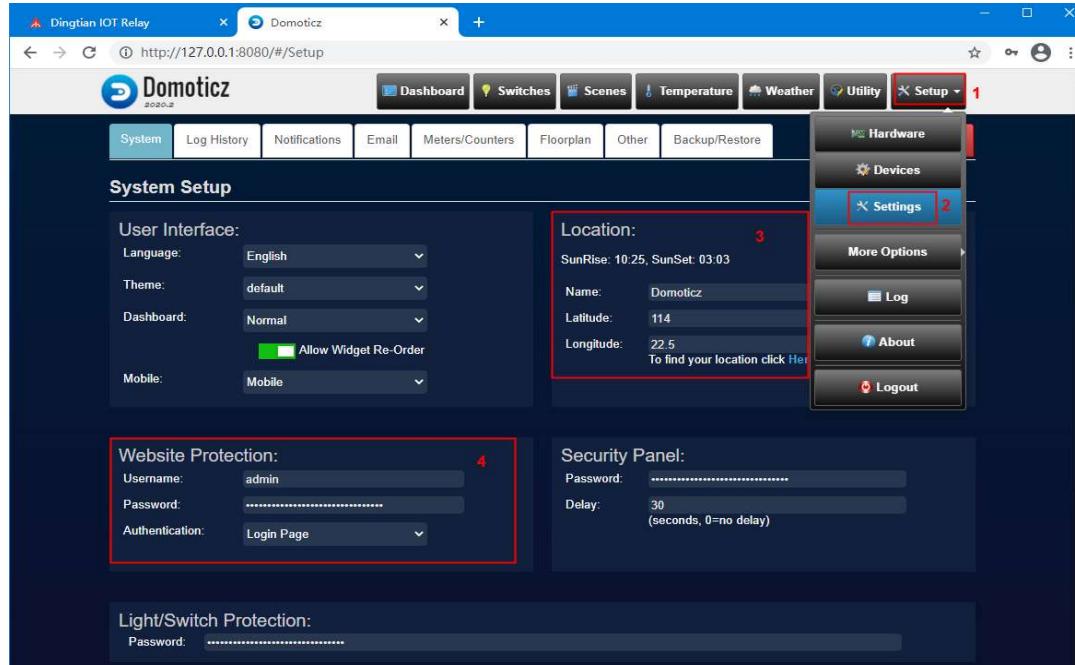
dingtian-relay - RELAY7	Off
Last Seen: 2020-04-30 10:26:14	Type: Light/Switch, Switch, On/Off
	Log  Timers

dingtian-relay - RELAY8	Off
Last Seen: 2020-04-30 10:37:28	Type: Light/Switch, Switch, On/Off
	Log  Timers

## step 4: Domoticz mobile application

Please follow up step 1/2/3 firstly to confirm PC Domoticz connect

### 1 Set the Location, User name and password on PC Domoticz



### 2 Install Domoticz

Android google play “Domoticz Home Automation Lite”, which is free of charge and cannot refresh automatically. So please refresh by manual after do it



### 3 Set Domoticz Server parameter

Server Name  
domoticz server

---

Server address  
192.168.1.88

---

HTTP Port 8080

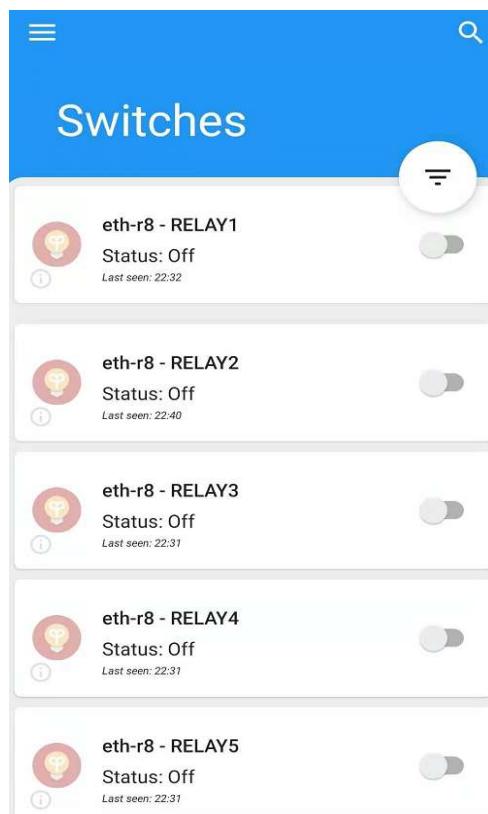
Username admin Password   Show password

---

Directory

---

Different server address  
Use different address for local connection



Domoticz mobile connect successfully, then you can control the switch by mobile phone

# Appendix III How to MQTT

## MQTT Ethernet

The screenshot shows a web browser window with two tabs: "Dingtian IOT Relay" and "Dingtian IOT WiFi Relay". The active tab is "Dingtian IOT WiFi Relay" at the URL 192.168.1.100/menu\_page.html. The page title is "Dingtian IOT Relay". On the left, a sidebar menu includes "Setting", "Relay Connect", "Relay CGI Test", "Relay Task", "Input", "Input Link Relay", "IP WatchDog", "Reset User", "To Factory", and "Reboot". The main content area is titled "Setting" and contains a table of device configuration parameters:

<b>Hardware Version</b>	V1.4
<b>Software Version</b>	V2.17.28
<b>Build Date</b>	2021-01-21 21:23:13
<b>Model</b>	Dingtian IOT RELAY-8
<b>Serial Number</b>	1868
<b>Date Time</b>	1/30/2021, 22:47:00
<b>NTP Server</b>	pool.ntp.org
<b>Hostname</b>	Dingtian-Relay1868
<b>Hostname+Suffix</b>	Dingtian-Relay
<b>HTTP Server Port</b>	80
<b>DHCP</b>	No
<b>IP</b>	192.168.1.100
<b>Netmask</b>	255.255.255.0
<b>Gateway</b>	192.168.1.1
<b>DNS</b>	192.168.1.1
<b>MAC</b>	bc:34:88:00:06:9d
<b>WiFi AP IP</b>	192.168.7.1
<b>WIFI STA IP</b>	192.168.1.97

A green "Save" button is located at the bottom right of the form.

## MQTT WIFI

The screenshot shows a web browser window titled "Dingtian IOT WiFi Relay". The URL is "Not secure | 192.168.1.100/menu\_page.html". The main content is a "Setting" page for a Dingtian IOT Relay. On the left is a sidebar menu with options like "Setting", "Relay Connect", "Relay CGI Test", etc. The main area contains a table of settings:

<b>Hardware Version</b>	V1.4
<b>Software Version</b>	V2.17.28
<b>Build Date</b>	2021-01-21 21:23:13
<b>Model</b>	Dingtian IOT RELAY-8
<b>Serial Number</b>	1868
<b>Date Time</b>	1/30/2021, 22:47:00
<b>NTP Server</b>	pool.ntp.org
<b>Hostname</b>	Dingtian-Relay1868
<b>Hostname+Suffix</b>	Dingtian-Relay + SN
<b>HTTP Server Port</b>	80
<b>DHCP</b>	No
<b>IP</b>	192.168.1.100
<b>Netmask</b>	255.255.255.0
<b>Gateway</b>	192.168.1.1
<b>DNS</b>	192.168.1.1
<b>MAC</b>	bc:34:88:00:06:9d
<b>WiFi AP IP</b>	192.168.7.1
<b>WIFI STA IP</b>	192.168.1.97

A green "Save" button is located at the bottom right of the form.

Relay board Ethernet MQTT Client Id

dingtian-relay+SN

Relay board WiFi MQTT Client Id

dingtian-wrelay+SN

example:

below relay board “Serial Number” is 1868

so ETH MQTT client id is:dingtian-relay1868

so WiFi MQTT client id is:dingtian-wrelay1868

Relay board MQTT Topic and Publish format:

below V2.15.869

/dingtian/relay/in/control

/dingtian/relay/out/relayX

above V2.15.869

/dingtian/relaySN/in/control

/dingtian/relaySN/out/relayX

above V2.17.xx

ETH

/dingtian/relaySN/in/control

/dingtian/relaySN/in/rX

/dingtian/relaySN/out/rX

/dingtian/relaySN/out/iX

/dingtian/relaySN/out/relayX

/dingtian/relaySN/out/inputX

/dingtian/relaySN/out/ip

/dingtian/relaySN/out/sn

/dingtian/relaySN/out/mac

/dingtian/relaySN/out/input\_cnt

/dingtian/relaySN/out/relay\_cnt

WiFi

/dingtian/wrelaySN/in/control

/dingtian/wrelaySN/in/rX

/dingtian/wrelaySN/out/rX

/dingtian/wrelaySN/out/iX

/dingtian/wrelaySN/out/relayX

/dingtian/wrelaySN/out/inputX

/dingtian/wrelaySN/out/ip

/dingtian/wrelaySN/out/sn

/dingtian/wrelaySN/out/mac

/dingtian/wrelaySN/out/input\_cnt

/dingtian/wrelaySN/out/relay\_cnt

example:

below V2.15.869  
/dingtian/relay/in/control  
/dingtian/relay/out/relay1  
/dingtian/relay/out/relay2  
/dingtian/relay/out/relay3  
/dingtian/relay/out/relay4  
/dingtian/relay/out/relay5  
/dingtian/relay/out/relay6  
/dingtian/relay/out/relay7  
/dingtian/relay/out/relay8

above V2.15.869

/dingtian/relay1868/in/control  
/dingtian/relay1868/out/relay1  
/dingtian/relay1868/out/relay2  
/dingtian/relay1868/out/relay3  
/dingtian/relay1868/out/relay4  
/dingtian/relay1868/out/relay5  
/dingtian/relay1868/out/relay6  
/dingtian/relay1868/out/relay7  
/dingtian/relay1868/out/relay8

above V2.17.xx

ETH  
/dingtian/relay1868/in/control  
/dingtian/relay1868/in/r1~8  
/dingtian/relay1868/out/r1~8  
/dingtian/relay1868/out/i1~8  
/dingtian/relay1868/out/relay1~8  
/dingtian/relay1868/out/input1~8  
/dingtian/relay1868/out/ip  
/dingtian/relay1868/out/sn  
/dingtian/relay1868/out/mac  
/dingtian/relay1868/out/input\_cnt  
/dingtian/relay1868/out/relay\_cnt

WIFI

/dingtian/wrelay1868/in/control  
/dingtian/wrelay1868/in/r1~8  
/dingtian/wrelay1868/out/r1~8  
/dingtian/wrelay1868/out/i1~8  
/dingtian/wrelay1868/out/relay1~8  
/dingtian/wrelay1868/out/input1~8

/dingtian/wrelay1868/out/ip  
/dingtian/wrelay1868/out/sn  
/dingtian/wrelay1868/out/mac  
/dingtian/wrelay1868/out/input\_cnt  
/dingtian/wrelay1868/out/relay\_cnt

**Relay board MQTT Topic to subscribe:**

/dingtian/relay/in/control  
or  
/dingtian/relay1868/in/control

type:ON/OFF,DELAY,JOGGING  
idx:1~8  
status:ON,OFF  
time: (ON/OFF)0,(DELAY)1~65535second,(JOGGING)1~255\*100ms  
pass:0~9999

example:

```
{"type":"ON/OFF","idx":1,"status":"ON","time":0,"pass":0}  
{"type":"DELAY","idx":2,"status":"ON","time":5,"pass":0}  
{"type":"JOGGING","idx":3,"status":"ON","time":5,"pass":0}  
{"type":"ON/OFF","idx":4,"status":"OFF","time":0,"pass":0}
```

**Relay board MQTT Topic to publish:**

/dingtian/relay/out/relay1  
/dingtian/relay/out/relay2  
/dingtian/relay/out/relay3  
/dingtian/relay/out/relay4  
/dingtian/relay/out/relay5  
/dingtian/relay/out/relay6  
/dingtian/relay/out/relay7  
/dingtian/relay/out/relay8  
or  
/dingtian/relay1868/out/relay1  
/dingtian/relay1868/out/relay2  
/dingtian/relay1868/out/relay3  
/dingtian/relay1868/out/relay4  
/dingtian/relay1868/out/relay5  
/dingtian/relay1868/out/relay6  
/dingtian/relay1868/out/relay7  
/dingtian/relay1868/out/relay8  
or  
/dingtian/relay1868/out/r1~8  
/dingtian/relay1868/out/i1~8

```
/dingtian/relay1868/out/relay1~8  
/dingtian/relay1868/out/input1~8  
/dingtian/relay1868/out/ip  
/dingtian/relay1868/out/sn  
/dingtian/relay1868/out/mac  
/dingtian/relay1868/out/input_cnt  
/dingtian/relay1868/out/relay_cnt
```

idx:1~8  
status:ON,OFF

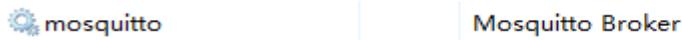
example:  
{“idx”:”1”,“status”:”OFF”}

## step 1: Install and config Broker

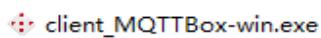


1 config “mosquitto.conf”  
bind\_address 0.0.0.0  
port 1883

2 start windows Service “mosquitto”



## step 2: Install MQTT PC client



## step 3: MQTTBox Add Client



Protocol:mqtt/tcp  
Host:192.168.1.88:1883(Broker server ip and port)  
Username:mqtt  
Password:123  
Broker MQTT V3.1.1 compliant

MQTT Client Name	MQTT Client Id	Append timestamp to MQTT client id?	Broker is MQTT v3.1.1 compliant?
relay_board	c27e3dba-456d-47d3-9209-1bt	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> Yes
Protocol	Host	Clean Session?	Auto connect on app launch?
mqtt / tcp	192.168.1.88:1883	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> Yes
Username	Password	Reschedule Pings?	Queue outgoing QoS zero messages?
mqtt	...	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> Yes
Reconnect Period (milliseconds)	Connect Timeout (milliseconds)	KeepAlive (seconds)	
1000	30000	10	
Will - Topic	Will - QoS	Will - Retain	Will - Payload
Will - Topic	1 - Atleast Once	<input checked="" type="checkbox"/> Yes	
		<b>Save</b>	<b>Delete</b>

Config Relay board Web page MQTT parameter

### Dingtian IOT Relay

Menu

- Setting
- Relay Connect
- Relay CGI Test
- Relay Task
- Input
- Input Link Relay
- IP WatchDog
- Reset User
- To Factory
- Reboot

Channel	Protocol	Addr	Baud	Databits	Stopbits	Parity
RS485	Modbus-RTU	1	115200bps	8bit	1bit	None
CAN	Dingtian String	1	125Kbps			
ETH-UDP1	Dingtian Binary	192.168.1.88	60000	60000		
ETH-UDP2	Dingtian String	192.168.1.88	60001	60001		
ETH-TCP Server	Modbus-TCP				Local Port	
ETH-TCP Client	Modbus-RTU Over TCP	192.168.1.9	502			
ETH-MQTT	MQTT	192.168.1.88	1883	mqtt	123	

Other	
Relay Password	0 ~9999(0 no password)
Keep Alive Second	30 1~120 second(0 close)
Jogging Time	5 1~255 (1=100ms)
Power Failure Recovery Relay	No
Input Control Relay	Yes

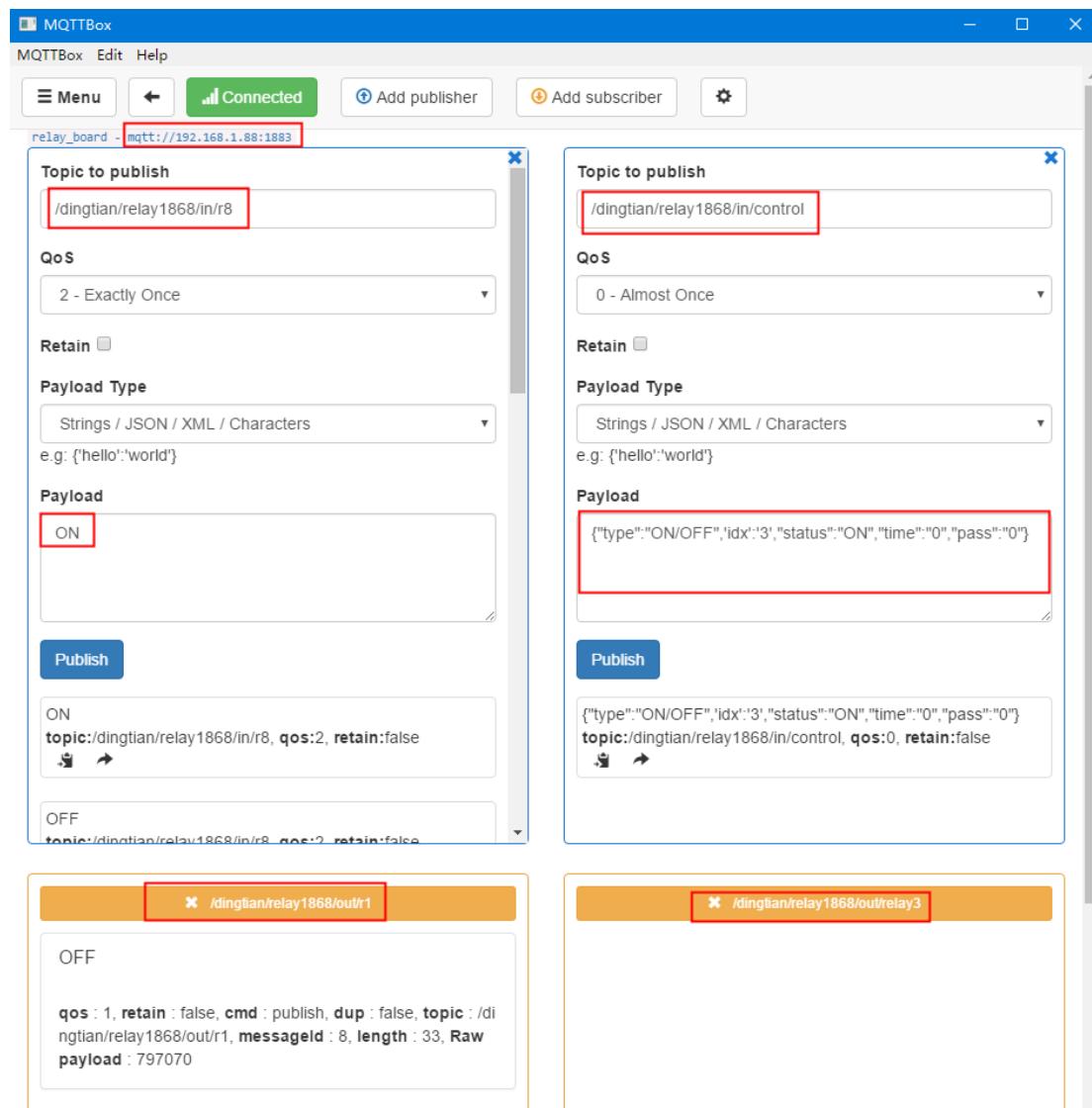
Button Type			
Momentary	Momentary	Momentary	Momentary
Momentary	Momentary	Momentary	Momentary

**Save**

### Relay Test

Relay1:Off	Relay2:Off	Relay3:Off	Relay4:Off
Relay5:Off	Relay6:Off	Relay7:Off	Relay8:Off

## step 4: MQTTBox Publish topic to relay board and subscribe topic



# Appendix IV How to CoAP

you need linux system

## step 1: compile libcoap

```
git clone --recurse-submodules https://github.com/obgm/libcoap  
./autogen.sh  
./configure --disable-manpages --enable-examples --enable-tests  
make
```

## step 2: CoAP Get relay status

Relay Status(1:ON, 0:OFF)

```
./coap-client -m get coap://192.168.1.100/dingtian/r1  
./coap-client -m get coap://192.168.1.100/dingtian/r2  
./coap-client -m get coap://192.168.1.100/dingtian/r3  
./coap-client -m get coap://192.168.1.100/dingtian/r4  
./coap-client -m get coap://192.168.1.100/dingtian/r5  
./coap-client -m get coap://192.168.1.100/dingtian/r6  
./coap-client -m get coap://192.168.1.100/dingtian/r7  
./coap-client -m get coap://192.168.1.100/dingtian/r8
```

Input Status(1:High, 0:Low)

```
./coap-client -m get coap://192.168.1.100/dingtian/i1  
./coap-client -m get coap://192.168.1.100/dingtian/i2  
./coap-client -m get coap://192.168.1.100/dingtian/i3  
./coap-client -m get coap://192.168.1.100/dingtian/i4  
./coap-client -m get coap://192.168.1.100/dingtian/i5  
./coap-client -m get coap://192.168.1.100/dingtian/i6  
./coap-client -m get coap://192.168.1.100/dingtian/i7  
./coap-client -m get coap://192.168.1.100/dingtian/i8
```

## step 3: CoAP Control relay(simple)

```
./coap-client -e "1" -m put coap://192.168.1.100/dingtian/r1      # relay1 ON  
./coap-client -e "0" -m put coap://192.168.1.100/dingtian/r1      # relay1 OFF  
./coap-client -e "1" -m put coap://192.168.1.100/dingtian/r2      # relay2 ON  
./coap-client -e "0" -m put coap://192.168.1.100/dingtian/r2      # relay2 OFF  
./coap-client -e "1" -m put coap://192.168.1.100/dingtian/r3      # relay3 ON  
./coap-client -e "0" -m put coap://192.168.1.100/dingtian/r3      # relay3 OFF  
./coap-client -e "1" -m put coap://192.168.1.100/dingtian/r4      # relay4 ON  
./coap-client -e "0" -m put coap://192.168.1.100/dingtian/r4      # relay4 OFF  
./coap-client -e "1" -m put coap://192.168.1.100/dingtian/r5      # relay5 ON  
./coap-client -e "0" -m put coap://192.168.1.100/dingtian/r5      # relay5 OFF  
./coap-client -e "1" -m put coap://192.168.1.100/dingtian/r6      # relay6 ON  
./coap-client -e "0" -m put coap://192.168.1.100/dingtian/r6      # relay6 OFF
```

```
./coap-client -e "1" -m put coap://192.168.1.100/dingtian/r7      # relay7 ON  
./coap-client -e "0" -m put coap://192.168.1.100/dingtian/r7      # relay7 OFF  
./coap-client -e "1" -m put coap://192.168.1.100/dingtian/r8      # relay8 ON  
./coap-client -e "0" -m put coap://192.168.1.100/dingtian/r8      # relay8 OFF
```

## step 4: CoAP Control relay

format:

```
status:type:time:password  
status:0,1  
type:ON/OFF,DELAY,JOGGING  
time:(ON/OFF)0,(DELAY)1~65535second,(JOGGING)1~255*100ms  
password:0~9999
```

example:

```
1:ON/OFF:0:4660  
status:1  
type:ON/OFF  
time:0  
password:4660
```

ON/OFF example:

```
./coap-client -e "1:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r1  
./coap-client -e "1:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r2  
./coap-client -e "1:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r3  
./coap-client -e "1:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r4  
./coap-client -e "1:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r5  
./coap-client -e "1:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r6  
./coap-client -e "1:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r7  
./coap-client -e "1:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r8  
.coap-client -e "0:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r1  
.coap-client -e "0:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r2  
.coap-client -e "0:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r3  
.coap-client -e "0:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r4  
.coap-client -e "0:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r5  
.coap-client -e "0:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r6  
.coap-client -e "0:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r7  
.coap-client -e "0:ON/OFF:0:4660" -m put coap://192.168.1.100/dingtian/r8
```

DELAY example:

```
./coap-client -e "1:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r1  
./coap-client -e "1:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r2  
./coap-client -e "1:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r3  
./coap-client -e "1:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r4  
./coap-client -e "1:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r5
```

```
./coap-client -e "1:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r6
./coap-client -e "1:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r7
./coap-client -e "1:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r8
./coap-client -e "0:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r1
./coap-client -e "0:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r2
./coap-client -e "0:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r3
./coap-client -e "0:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r4
./coap-client -e "0:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r5
./coap-client -e "0:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r6
./coap-client -e "0:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r7
./coap-client -e "0:DELAY:5:4660" -m put coap://192.168.1.100/dingtian/r8
```

JOGGING example:

```
./coap-client -e "1:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r1
./coap-client -e "1:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r2
./coap-client -e "1:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r3
./coap-client -e "1:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r4
./coap-client -e "1:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r5
./coap-client -e "1:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r6
./coap-client -e "1:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r7
./coap-client -e "1:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r8
./coap-client -e "0:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r1
./coap-client -e "0:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r2
./coap-client -e "0:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r3
./coap-client -e "0:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r4
./coap-client -e "0:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r5
./coap-client -e "0:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r6
./coap-client -e "0:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r7
./coap-client -e "0:JOGGING:5:4660" -m put coap://192.168.1.100/dingtian/r8
```

# Appendix V How to “input mutual control”

Example param:

DevA IP: 192.168.1.100

DevB IP: 192.168.1.101

web config “Input Control Relay”

“No”:input only control remote output

“Yes”:input control local output and remote output

DevA web config:

Menu

- Setting
- Relay Connect
- Relay CGI Test
- Relay Task
- Input
- Input Link Relay
- IP WatchDog
- Reset User
- To Factory
- Reboot

## Relay

Channel	Protocol	Addr	Baud	Databits	Stopbits	Parity
RS485	Modbus-RTU	1	115200bps	8bit	1bit	None
CAN	Dingtian String	1	125Kbps			
ETH-UDP1	Dingtian Binary	192.168.1.9		Remote Port	Local Port	
ETH-UDP2	Input Mutual Control	192.168.1.101	DevB IP	Remote Port	Local Port	
ETH-TCP Server	Modbus-TCP			Local Port	502	
ETH-TCP Client	Modbus-RTU Over TCP	192.168.1.9		Remote Port		
ETH-MQTT	MQTT	192.168.1.9		Broker Port	Broker Username	Broker Password

Other	
Relay Password	0 0-9999(0 no password)
Keep Alive Second	30 1~120 second(0 close)
Jogging Time	5 1~255 (1=100ms)
Power Failure Recovery Relay	No
Input Control Relay	No DevA input not control relay

Button Type			
Momentary	Momentary	Momentary	Momentary

**Save**

DevB web config:

Menu

- [Setting](#)
- [Relay Connect](#)
- [Relay CGI Test](#)
- [Relay Task](#)
- [Input](#)
- [Input Link Relay](#)
- [IP WatchDog](#)
- [Reset User](#)
- [To Factory](#)
- [Reboot](#)

## Relay

Channel	Protocol	Addr	Baud	Databits	Stopbits	Parity
RS485	Modbus-RTU	1	115200bps	8bit	1bit	None
CAN	Dingtian String	ID	Speed			
ETH-UDP1	Dingtian Binary	Remote Address	192.168.1.9	Remote Port	Local Port	
ETH-UDP2	Input Mutual Control	Other Relay Board IP	192.168.1.100 DevA IP	Remote Port	Local Port	
ETH-TCP Server	Modbus-TCP	Local Port 502				
ETH-TCP Client	Modbus-RTU Over TCP	Remote Address	192.168.1.9	Remote Port	502	
ETH-MQTT	MQTT	Broker Address	192.168.1.9	Broker Port	Broker Username	Broker Password

**Other**

Relay Password	0	0~9999(0 no password)
Keep Alive Second	30	1~120 second(0 close)
Jogging Time	5	1~255 (1=100ms)
Power Failure Recovery Relay	No	1~255 (1=100ms)
Input Control Relay	No	DevB input not control relay

**Button Type**

Momentary ▾ Momentary ▾ Momentary ▾ Momentary ▾

Save

---

**Relay Test**

Relay1:Off
Relay2:Off
Relay3:Off
Relay4:Off

# Appendix VI How to Home Assistant

## Notice:

- 1 Close your firewall
- 2 All command and script run as root/administrator
- 3 please step by step

## Step 1 config Relay board

Dingtian IOT Relay

Relay

Menu

Setting

Relay Connect

Relay CGI Test

Relay Task

Input

Input Link Relay

IP WatchDog

Reset User

To Factory

Upgrade

Reboot

Channel	Protocol	Addr	Baud	Databits	Stopbits	Parity
RS485	Modbus-RTU	1	115200bps	8bit	1bit	None
CAN	Dingtian String	ID	Speed	Frame Type		
UDP1	Dingtian Binary	192.168.1.9		Remote Address	Remote Port	Local Port
UDP2	Dingtian String	192.168.1.9		Remote Address	Remote Port	Local Port
TCP Server	Modbus-TCP			Remote Address	Remote Port	Local Port
TCP Client	Modbus-RTU Over TCP	192.168.1.9	502			
MQTT	MQTT	Broker Address	Broker Port	Broker Username	Broker Password	

Other

Relay Password: 0 (0~9999(0 no password))

Keep Alive Second: 30 (1~120 second(0 close))

Power Failure Recovery Relay: No

Save

Relay Test

Relay1:Off    Relay2:Off

The “**192.168.1.9**” is MQTT broker IP

## Step 2 Install MQTT Broker

Link step 1: Install and config Broker for details how to install MQTT Broker

## Step 3 Install Home Assistant

### 1 install python

Python download link:

<https://www.python.org/ftp/python/3.10.0/python-3.10.0.exe>

### 2 install Home Assistant

Windows install command:

python -m pip install --upgrade homeassistant tzdata met

### 3 Add relay board Switch and input to Home Assistant

Home assistant default config yaml path:

<C:\Users\Administrator\AppData\Roaming\.homeassistant\configuration.yaml>

example is 2 channel relay board, SN is 100

when you use it please replace with you relay board SN

SDK path:

MQTT\home\_assistant\_example.yaml

add below lines to [configuration.yaml](#)

```
#####
# start #####
switch:
  - platform: mqtt
    unique_id: dingtian100-r1
    name: "Dingtian Ethernet Switch1"
    state_topic: "/dingtian/relay100/out/r1"
    command_topic: "/dingtian/relay100/in/r1"
    availability:
      - topic: "/dingtian/relay100/out/lwt_availability"
        payload_available: "online"
        payload_not_available: "offline"
      payload_on: "ON"
      payload_off: "OFF"
      state_on: "ON"
      state_off: "OFF"
    optimistic: false
```

```
    qos: 0
    retain: false

    - platform: mqtt
      unique_id: dingtian100-r2
      name: "Dingtian Ethernet Switch2"
      state_topic: "/dingtian/relay100/out/r2"
      command_topic: "/dingtian/relay100/in/r2"
      availability:
        - topic: "/dingtian/relay100/out/lwt_availability"
          payload_available: "online"
          payload_not_available: "offline"
          payload_on: "ON"
          payload_off: "OFF"
          state_on: "ON"
          state_off: "OFF"
          optimistic: false
      qos: 0
      retain: false

binary_sensor:
  - platform: mqtt
    unique_id: dingtian100-i1
    name: "Dingtian Ethernet Input1"
    state_topic: "/dingtian/relay100/out/i1"
    availability:
      - topic: "/dingtian/relay100/out/lwt_availability"
        payload_available: "online"
        payload_not_available: "offline"
        payload_on: "ON"
        payload_off: "OFF"
    qos: 0

  - platform: mqtt
    unique_id: dingtian100-i2
    name: "Dingtian Ethernet Input2"
    state_topic: "/dingtian/relay100/out/i2"
    availability:
      - topic: "/dingtian/relay100/out/lwt_availability"
        payload_available: "online"
        payload_not_available: "offline"
        payload_on: "ON"
        payload_off: "OFF"
    qos: 0
```

```
##### end #####
```

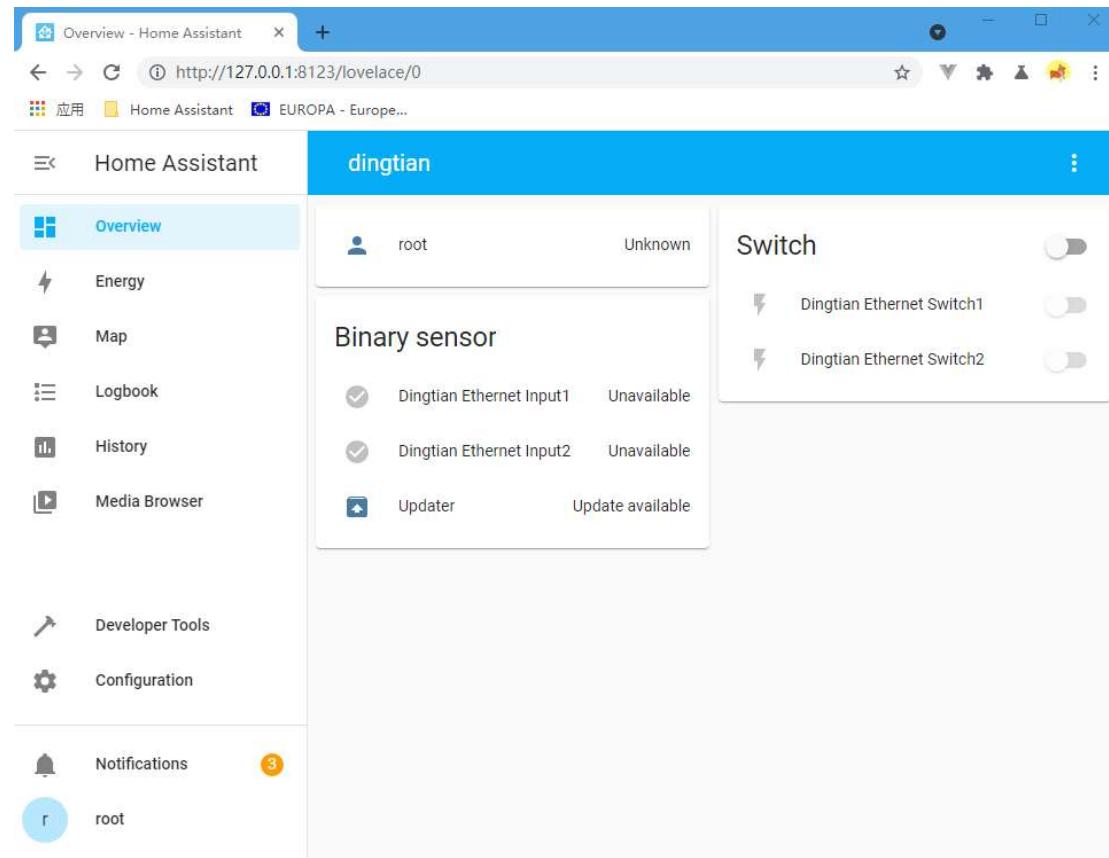
## 4 Home Assistant config MQTT Broker

Windows open Home Assistant command:

`hass -open-ui`

Home Assistant web link:

<http://127.0.0.1:8123/>



config MQTT Broker

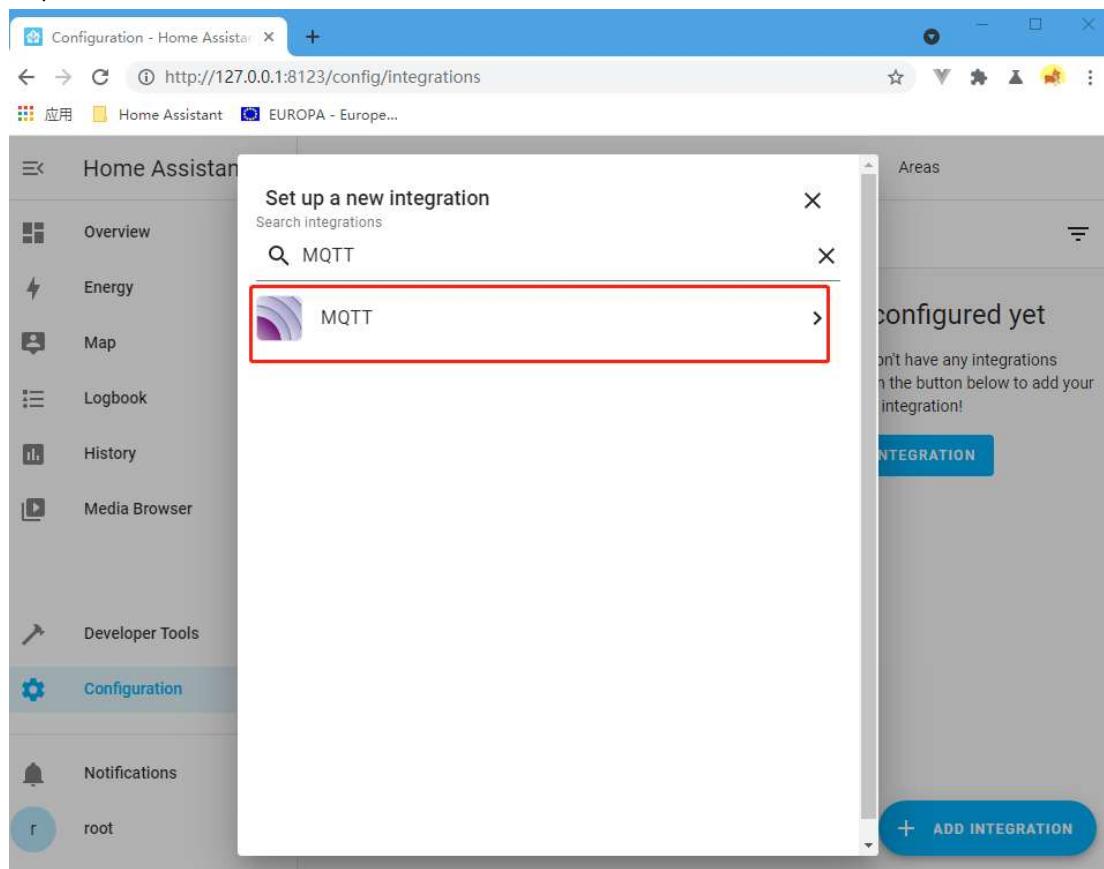
step 1

The screenshot shows the Home Assistant Configuration dashboard at <http://127.0.0.1:8123/config/dashboard>. The left sidebar has a red box around the 'Configuration' item (1). The main content area is titled 'Configure Home Assistant' with the sub-section 'Integrations' highlighted by a red box (2). A red box also surrounds the 'ADD INTEGRATION' button at the bottom right of the integrations list.

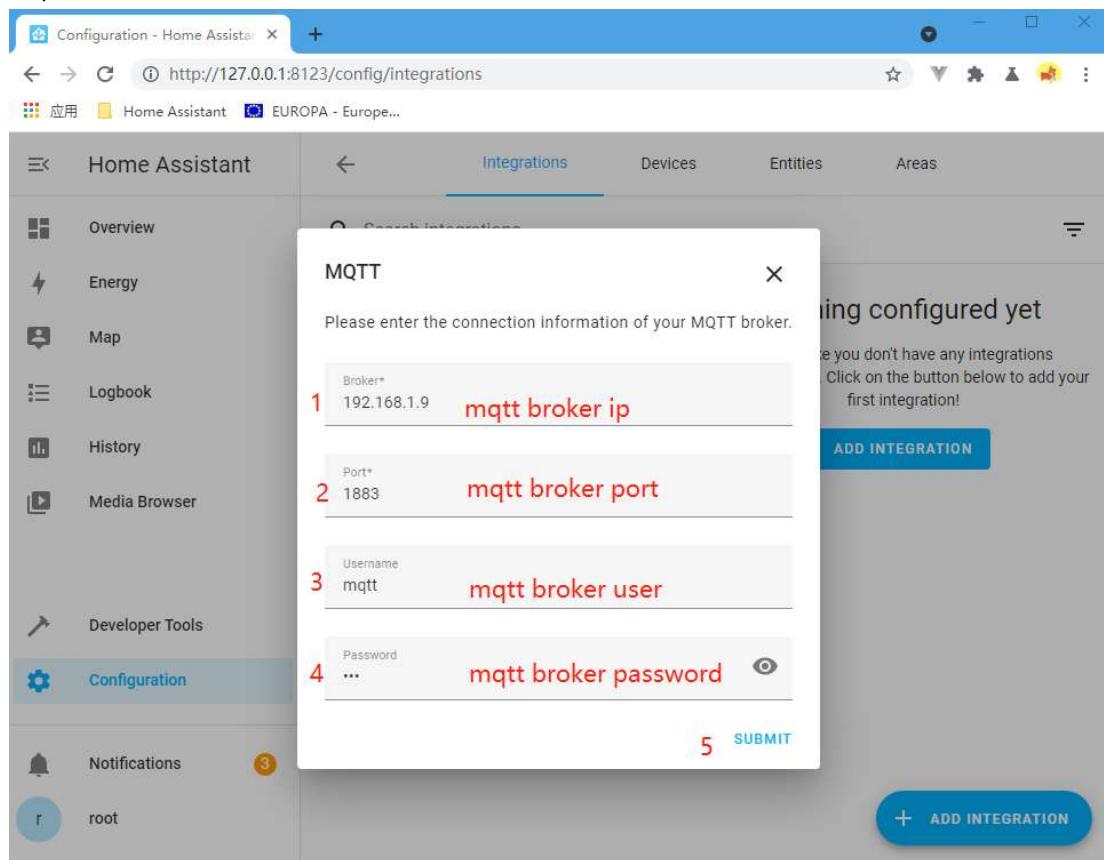
step 2

The screenshot shows the 'Integrations' page at <http://127.0.0.1:8123/config/integrations>. The left sidebar has a red box around the 'Configuration' item (1). The main content area shows a 'Discovered' section with a single entry: '投屏电视C0' (DLNA Digital Media Renderer) with 'CONFIGURE' and 'IGNORE' buttons. To the right, a message says 'Nothing configured yet' with a note: 'Seems like you don't have any integrations configured yet. Click on the button below to add your first integration!'. A red box surrounds the '+ ADD INTEGRATION' button at the bottom right.

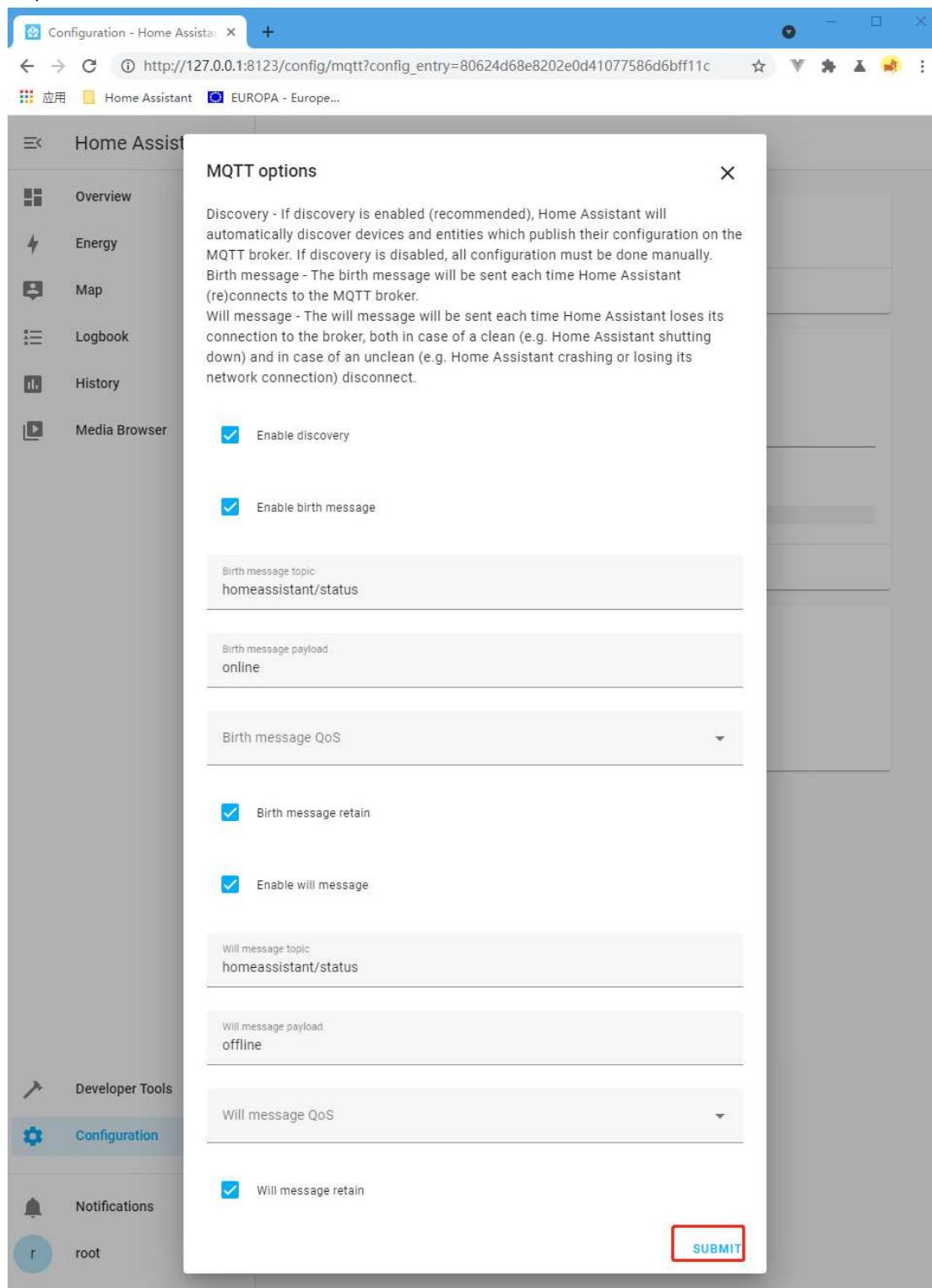
### step 3



### step 4



## step 5



## step 6

restart Home Assistant

**Ctrl+C** hot key to Stop Home Assistant

**hass –open-ui** to start Home Assistant

## step 6

new Home Assistant can control relay and get input status

The screenshot shows the Home Assistant web interface with a red box highlighting the configuration card for the 'dingtian' entity. The card displays the following information:

- User: root, Unknown
- Binary sensor:
  - Dingtian Ethernet Input1: Off
  - Dingtian Ethernet Input2: Off
- Switch:
  - Dingtian Ethernet Switch1: Off
  - Dingtian Ethernet Switch2: Off
- Updater: Update available

The sidebar on the left includes links for Overview, Energy, Map, Logbook, History, Media Browser, Developer Tools, Configuration, Notifications (with a '2' notification), and root.

# Appendix VII How to openHAB

## Notice:

- 1 Close your firewall
- 2 All command and script run as root/administrator
- 3 please step by step

## Step 1 config Relay board

Dingtian IOT Relay

Relay

Menu

Setting

Relay Connect

Relay CGI Test

Relay Task

Input

Input Link Relay

IP WatchDog

Reset User

To Factory

Upgrade

Reboot

Channel	Protocol	Addr	Baud	Databits	Stopbits	Parity
RS485	Modbus-RTU	1	115200bps	8bit	1bit	None
CAN	Dingtian String	1	125Kbps	Standard Frame		
UDP1	Dingtian Binary	192.168.1.9	60000	Local Port		
UDP2	Dingtian String	192.168.1.9	60001	Local Port		
TCP Server	Modbus-TCP		502	Local Port		
TCP Client	Modbus-RTU Over TCP	192.168.1.9	1883	mqtt	123	Broker Password
MQTT	MQTT	Broker Address	Broker Port	Broker Username	Broker Password	

Other

Relay Password: 0 (0~9999(0 no password))

Keep Alive Second: 30 (1~120 second(0 close))

Power Failure Recovery Relay: No

Save

Relay Test

Relay1:Off      Relay2:Off

The “**192.168.1.9**” is MQTT broker IP

## **Step 2 Install MQTT Broker**

Link step 1: Install and config Broker for details how to install MQTT Broker

## **Step 3 install JDK and openHAB**

### **1 Download**

JDK download link:

[https://cdn.azul.com/zulu/bin/zulu11.54.25-ca-jdk11.0.14.1-win\\_x64.msi](https://cdn.azul.com/zulu/bin/zulu11.54.25-ca-jdk11.0.14.1-win_x64.msi)

OpenHAB download link:

<https://openhab.jfrog.io/artifactory/libs-release-local/org/openhab/distro/openhab/3.2.0/openhab-3.2.0.zip>

OpenHAB add-on download link:

<https://openhab.jfrog.io/artifactory/libs-release-local/org/openhab/distro/openhab-addons/3.2.0/openhab-addons-3.2.0.kar>

## 2 install

unpack zip directory tree as below image(Example install directory is “D:\tool\openHAB”):

**Notice:**

The openHAB install directory must **contain no spaces**

data (D:) > tool > openHAB			
名称	修改日期	类型	大小
openhab-3.2.0	2022-03-30 15:43	文件夹	
zulu11.54.25-ca-jdk11.0.14.1-win_x64	2022-02-08 4:30	文件夹	

data (D:) > tool > openHAB > openhab-3.2.0			
名称	修改日期	类型	大小
addons	2022-03-30 15:43	文件夹	
conf	2021-12-20 4:45	文件夹	
runtime	2021-12-20 4:45	文件夹	
userdata	2021-12-20 4:45	文件夹	
LICENSE.TXT	2021-12-20 4:45	文本文档	14 KB
start.bat	2021-12-20 4:27	Windows 批处理...	1 KB
start.sh	2021-12-20 4:27	Shell Script	1 KB
start_debug.bat	2021-12-20 4:27	Windows 批处理...	1 KB
start_debug.sh	2021-12-20 4:27	Shell Script	1 KB

data (D:) > tool > openHAB > openhab-3.2.0 > addons			
名称	修改日期	类型	大小
openhab-addons-3.2.0.kar	2022-03-30 14:50	KAR 文件	276,869 KB
README	2021-12-20 4:45	文件	1 KB

jdk11.0.14.1-win\_x64

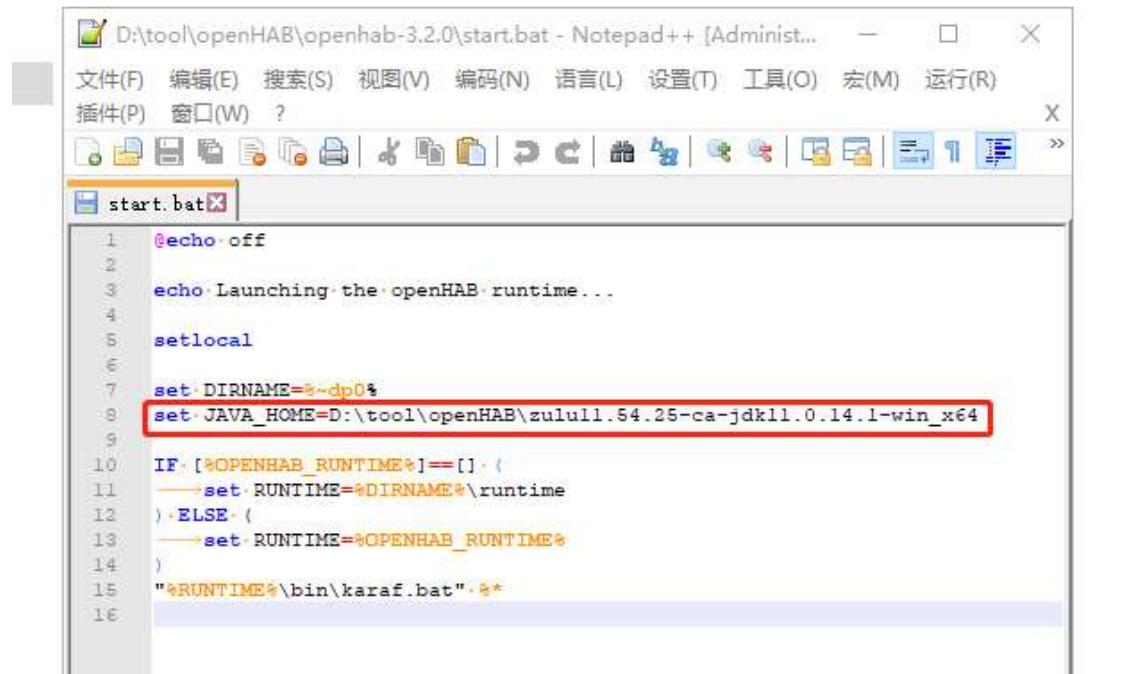
data (D:) > tool > openHAB > zulu11.54.25-ca-jdk11.0.14.1-win_x64			
名称	修改日期	类型	大小
bin	2022-02-08 4:30	文件夹	
conf	2022-02-08 4:26	文件夹	
demo	2022-02-08 4:26	文件夹	
include	2022-02-08 4:26	文件夹	
jmods	2022-02-08 4:26	文件夹	
legal	2022-02-08 4:26	文件夹	
lib	2022-02-08 4:26	文件夹	
DISCLAIMER	2022-02-08 4:30	文件	3 KB
readme.txt	2022-02-08 4:30	文本文档	1 KB
release	2022-02-08 4:26	文件	2 KB
Welcome.html	2022-02-08 4:30	Chromium HTM...	2 KB

### 3 Add jdk directory to “start.bat”

Add “set JAVA\_HOME=D:\tool\openHAB\zulu11.54.25-ca-jdk11.0.14.1-win\_x64”  
to file start.bat as below



名称	修改日期	类型	大小
addons	2022-03-30 15:43	文件夹	
conf	2021-12-20 4:45	文件夹	
runtime	2021-12-20 4:45	文件夹	
userdata	2021-12-20 4:45	文件夹	
LICENSE.TXT	2021-12-20 4:45	文本文档	14 KB
start.bat	2022-03-30 16:26	Windows 批处理...	1 KB
start.sh	2021-12-20 4:27	Shell Script	1 KB
start_debug.bat	2021-12-20 4:27	Windows 批处理...	1 KB
start_debug.sh	2021-12-20 4:27	Shell Script	1 KB

```
1 echo off
2
3 echo Launching the openHAB runtime...
4
5 setlocal
6
7 set DIRNAME=%~dp0%
8 set JAVA_HOME=D:\tool\openHAB\zulu11.54.25-ca-jdk11.0.14.1-win_x64
9
10 IF [%OPENHAB_RUNTIME%]==[] (
11     set RUNTIME=%DIRNAME%\runtime
12 ) ELSE (
13     set RUNTIME=%OPENHAB_RUNTIME%
14 )
15 "%RUNTIME%\bin\karaf.bat" &
```

## 4 First time init openHAB

### 1 double click “start.bat”

data (D:) > tool > openHAB > openhab-3.2.0			
名称	修改日期	类型	大小
addons	2022-03-31 21:05	文件夹	
conf	2022-03-31 21:06	文件夹	
runtime	2022-03-31 21:05	文件夹	
userdata	2022-04-01 16:28	文件夹	
LICENSE.TXT	2021-12-20 4:45	文本文档	14 KB
<b>start.bat</b>	2022-03-30 17:33	Windows 批处理...	1 KB
start.sh	2021-12-20 4:27	Shell Script	1 KB
start_debug.bat	2021-12-20 4:27	Windows 批处理...	1 KB
start_debug.sh	2021-12-20 4:27	Shell Script	1 KB

The screenshot shows a terminal window titled "管理员: Karaf". The title bar also includes "Launching the openHAB runtime...". The main area of the window displays the openHAB logo, which consists of various letters and symbols forming a word cloud-like pattern, followed by the text "3.2.0 - Release Build". Below the logo, there is a command-line interface with the following text:  
Use '<tab>' for a list of available commands  
and '[cmd] --help' for help on a specific command.  
To exit, use '<ctrl-d>' or 'logout'.  
openhab> -

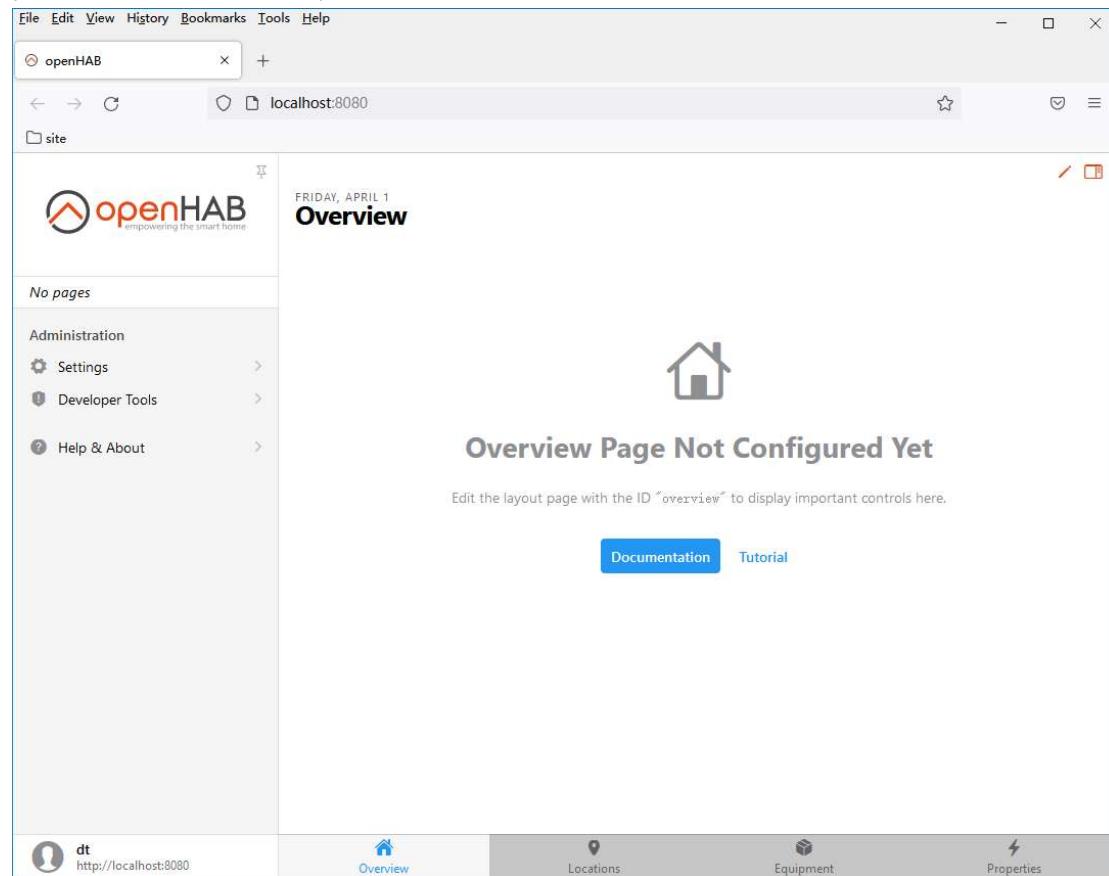
## 2 First time init openHAB

use Firefox open URL "<http://localhost:8080>"(my computer chromium can't open openHAB web page)

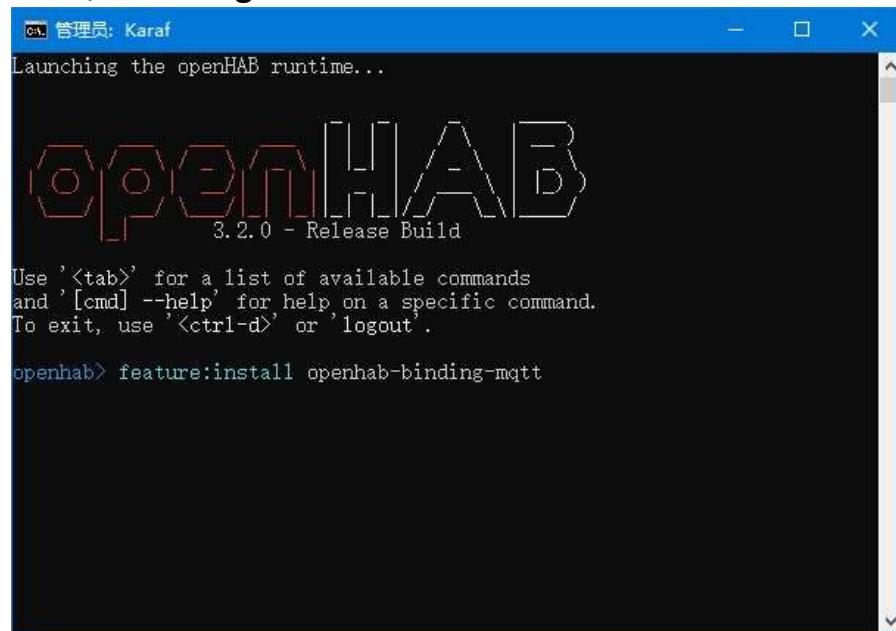
after first time config,you can get main web page like below

**Notice:**

please save username and password

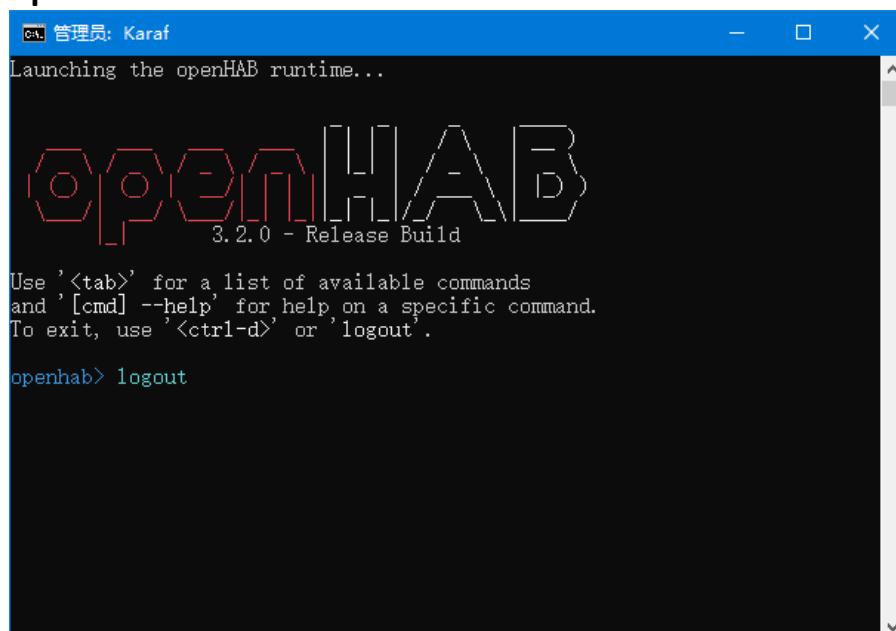


### 3 install MQTT-binding



```
管理员: Karaf
Launching the openHAB runtime...
[OpenHAB] 3.2.0 - Release Build
Use '<tab>' for a list of available commands
and '[cmd] --help' for help on a specific command.
To exit, use '<ctrl-d>' or 'logout'.
openhab> feature:install openhab-binding-mqtt
```

### 4 Stop openHAB



```
管理员: Karaf
Launching the openHAB runtime...
[OpenHAB] 3.2.0 - Release Build
Use '<tab>' for a list of available commands
and '[cmd] --help' for help on a specific command.
To exit, use '<ctrl-d>' or 'logout'.
openhab> logout
```

## Step 4 Add Dingtian Relay board to openHAB

2ch\_config for 2 channel relay board

4ch\_config for 4 channel relay board

8ch\_config for 8 channel relay board

## 1 Change json MQTT broker host, username,password

change file “org.openhab.core.thing.Thing.json”

```
1  {
2   "mqtt:broker:dingtianbroker": {
3     "class": "org.openhab.core.thing.internal.BridgeImpl",
4     "value": {
5       "label": "MQTT Broker",
6       "channels": [],
7       "configuration": {
8         "properties": {
9           "certificatepin": false,
10          "clientid": "ble677c2-577c-4678-86f6-5e0a060827b6",
11          "enableDiscovery": false,
12          "host": "192.168.1.9", change to you broker IP
13          "keepAlive": 60,
14          "lwtQos": 1,
15          "lwtRetain": true,
16          "password": "123", change to you broker password
17          "port": 1883,
18          "publickeypin": false,
19          "qos": 1,
20          "reconnectTime": 60000,
21          "secure": false,
22          "username": "mqtt" change to you broker username
23        },
24      },
25      "properties": {},
26      "uid": {
27        "segments": [
28          "mqtt",
29          "broker",
30          "dingtianbroker"
31        ],
32        "uid": "mqtt:broker:dingtianbroker"
33      },
34    },
35    "thingTypeUID": {
36      "segments": [
37        "mqtt",
38        "broker"
39      ],
40      "uid": "mqtt:broker"
41    }
42  },
43}
```

## 2 Change json SN(example SN 7920) to you relay board SN

Change file:

“org.openhab.core.thing.Thing.json”

“org.openhab.core.thing.link.ItemChannelLink.json”

“org.openhab.core.items.Item.json”

## org.openhab.core.thing.Thing.json

The screenshot shows a code editor window with the title "org.openhab.core.thing.Thing.json". The main pane displays a JSON configuration file. A search and replace dialog is open over the file, with the following details:

- Find what:** 7920
- Replace with:** 1 input you relay board SN
- Search mode:** Normal
- Replace options:** Replace All (checkbox checked)
- Transparency:** On losing focus

The JSON file content includes several MQTT topics and their configurations. One specific topic entry is highlighted:

```
    "mqtt:topic:dingtianbroker:DingtianRelay7920": {  
        "class": "org.openhab.core.thing.internal.ThingImpl",  
        "value": {  
            "label": "Relay7920",  
            "bridgeUID": {  
                "segments": [  
                    "mqtt",  
                    "broker",  
                    "dingtianbroker"  
                ],  
                "uid": "mqtt:broker:dingtianbroker"  
            },  
            "channels": [  
                {  
                    "acceptedItemType": "Switch",  
                    "kind": "STATE",  
                    "uid": {  
                        "segments": [  
                            "mqtt",  
                            "topic",  
                            "dingtianbroker",  
                            "DingtianRelay7920",  
                            "R1"  
                        ],  
                        "uid": "mqtt:topic:dingtianbroker:DingtianRelay7920:R1"  
                    },  
                    "channelTypeUID": {  
                        "segments": [  
                            "mqtt",  
                            "switch"  
                        ],  
                        "uid": "mqtt:switch"  
                    },  
                    "label": "DingtianRelay7920-R1",  
                    "description": "",  
                    "configuration": {  
                        "properties": {  
                            "commandTopic": "/dingtian/relay7920/in/r1",  
                            "off": "OFF",  
                            "on": "ON"  
                        }  
                    }  
                }  
            ]  
        }  
    }
```

The status bar at the bottom of the editor shows the following information:

- JSON file
- length : 16,233
- lines : 605
- Ln : 43
- Col : 43
- Sel : 4 | 1
- Unix (LF)
- UTF-8
- INS

## org.openhab.core.thing.link.ItemChannelLink.json

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

org.openhab.core.thing.Thing.json org.openhab.core.thing.link.ItemChannelLink.json org.openhab.core.items.Item.json

```
1 "DingtianRelay7920I1 -\u0003e mqtt:topic:dingtianbroker:DingtianRelay7920:I1": {
2     "class": "org.openhab.core.thing.link.ItemChannelLink",
3     "value": {
4         "c" Replace
5             Find Replace Find in Files Mark
6                 Find what: 7920 Find Next
7                 Replace with: 1 input you relay board SN Replace
8                     In selection Replace All 2
9                     Replace All in All Opened Documents
10                    Close
11
12             Backward direction
13             Match whole word only
14             Match case
15             Wrap around
16             Search mode
17             Normal (selected)
18             Extended (\n, \r, \t, \b, \x...)
19             Regular expression matches newline
20
21         },
22         "DingtianRelay7920I2 -\u0003e mqtt:topic:dingtianbroker:DingtianRelay7920:I2": {
23             "class": "org.openhab.core.thing.link.ItemChannelLink",
24             "value": {
25                 "channelUID": {
26                     "segments": [
27                         "mqtt",
28                         "topic",
29                         "dingtianbroker",
30                         "DingtianRelay7920",
31                         "I2"
32                     ],
33                     "uid": "mqtt:topic:dingtianbroker:DingtianRelay7920:I2"
34                 },
35                 "configuration": {
36                     "properties": {}
37                 },
38                 "itemName": "DingtianRelay7920I2"
39             }
40         },
41         "DingtianRelay7920I3 -\u0003e mqtt:topic:dingtianbroker:DingtianRelay7920:I3": {
42             "class": "org.openhab.core.thing.link.ItemChannelLink",
43             "value": {
44                 "channelUID": {
45                     "segments": [
46                         "mqtt",
47                         "topic",
48                         "dingtianbroker",
49                         "DingtianRelay7920",
50                         "I3"
51                     ],
52                     "uid": "mqtt:topic:dingtianbroker:DingtianRelay7920:I3"
53                 },
54                 "configuration": {
55                     "properties": {}
56                 },
57                 "itemName": "DingtianRelay7920I3"
58             }
59         },
60         "DingtianRelay7920I4 -\u0003e mqtt:topic:dingtianbroker:DingtianRelay7920:I4": {
61             "class": "org.openhab.core.thing.link.ItemChannelLink",
62             "value": {
63                 "channelUID": {
64                     "segments": [
65                         "mqtt",
66                         "topic",
67                         "dingtianbroker",
68                         "DingtianRelay7920",
69                         "I4"
70                     ],
71                     "uid": "mqtt:topic:dingtianbroker:DingtianRelay7920:I4"
72                 },
73                 "configuration": {
74                     "properties": {}
75                 }
76             }
77         }
78     }
79 }
```

## org.openhab.core.items.Item.json

The screenshot shows a code editor interface with three tabs at the top: "org.openhab.core.thing.Thing.json", "org.openhab.core.thing.link.ItemChannelLink.json", and "org.openhab.core.items.Item.json". The "org.openhab.core.items.Item.json" tab is active. A search dialog is open over the code area, with the following details:

- Find what:** 7920
- Replace with:** 1 input you relay board SN
- Search mode:**  Normal
- Replace options:**
  - Backward direction
  - Match whole word only
  - Match case
  - Wrap around
- Transparency:**
  - On losing focus
  - Always

The code editor displays a JSON object with multiple items, each representing a relay. The "label" field for the first item is being modified from "DingtianRelay7920-I1" to "1 input you relay board SN".

```
1, "t": {"DingtianRelay7920I1": { "class": "org.openhab.core.items.ManagedItemProvider$PersistedItem", "value": { "g": Replace, "i": "7920", "c": "1 input you relay board SN", "t": "Replace", "Find Next": "Find Next", "Replace": "Replace", "Replace All": "Replace All 2", "In selection": "In selection", "Replace All in All Opened Documents": "Replace All in All Opened Documents", "Close": "Close", "Backward direction": true, "Match whole word only": false, "Match case": false, "Wrap around": true, "Search mode": "Normal", "Extended (\n, \r, \t, \b, \x...)": false, "Regular expression": false, "matches newline": false, "Transparency": "Always" } } }, "DingtianRelay7920I2": { "class": "org.openhab.core.items.ManagedItemProvider$PersistedItem", "value": { "groupNames": [], "itemType": "Switch", "tags": [ "Point" ], "label": "DingtianRelay7920-I2", "category": "" } }, "DingtianRelay7920I3": { "class": "org.openhab.core.items.ManagedItemProvider$PersistedItem", "value": { "groupNames": [], "itemType": "Switch", "tags": [ "Point" ], "label": "DingtianRelay7920-I3", "category": "" } }, "DingtianRelay7920I4": { "class": "org.openhab.core.items.ManagedItemProvider$PersistedItem", "value": { "groupNames": [], "itemType": "Switch", "tags": [ "Point" ], "label": "DingtianRelay7920-I4", "category": "" } }, "DingtianRelay7920I5": { "class": "org.openhab.core.items.ManagedItemProvider$PersistedItem", "value": { "groupNames": [], "itemType": "Switch", "tags": [ "Point" ], "label": "DingtianRelay7920-I5", "category": "" } }, "DingtianRelay7920I6": { "class": "org.openhab.core.items.ManagedItemProvider$PersistedItem", "value": { "groupNames": [], "itemType": "Switch", "tags": [ "Point" ], "label": "DingtianRelay7920-I6", "category": "" } }
```

At the bottom of the editor, status information is displayed: "JSON file", "length : 4,466", "lines : 194", "Ln : 2", "Col : 17", "Sel : 4 | 1", "Unix (LF)", "UTF-8", and "INS".

### 3 Cover openHAB json

OpenHAB json path: "D:\tool\openHAB\openhab-3.2.0\userdata\jsondb"

Notice:

example openHAB install path "D:\tool\openHAB\openhab-3.2.0"

名称	修改日期	类型	大小
backup	2022-04-01 16:31	文件夹	
cover this 3 json file with yours			
org.openhab.core.items.Item.json	2022-03-31 17:08	JSON 源文件	5 KB
org.openhab.core.thing.link.ItemChannelLink.json	2022-03-31 17:11	JSON 源文件	8 KB
org.openhab.core.thing.Thing.json	2022-04-01 16:28	JSON 源文件	16 KB
uicomponents_ui_page.json	2022-03-31 21:12	JSON 源文件	1 KB
users.json	2022-04-01 16:31	JSON 源文件	2 KB

### 4 Control relay board with openHAB

1 double click "start.bat"

名称	修改日期	类型	大小
addons	2022-03-31 21:05	文件夹	
conf	2022-03-31 21:06	文件夹	
runtime	2022-03-31 21:05	文件夹	
userdata	2022-04-01 16:28	文件夹	
LICENSE.TXT	2021-12-20 4:45	文本文档	14 KB
start.bat	2022-03-30 17:33	Windows 批处理...	1 KB
start.sh	2021-12-20 4:27	Shell Script	1 KB
start_debug.bat	2021-12-20 4:27	Windows 批处理...	1 KB
start_debug.sh	2021-12-20 4:27	Shell Script	1 KB

管理员: Karaf  
Launching the openHAB runtime...  
[openHAB logo] 3.2.0 - Release Build  
Use '<tab>' for a list of available commands  
and '[cmd] --help' for help on a specific command.  
To exit, use '<ctrl-d>' or 'logout'.  
openhab> -

Wait 1 minute for openHAB startup

## 2 Open openHAB web page

It shows MQTT broker and Relay board 7920 is online

The screenshot shows the openHAB web interface at `localhost:8080/settings/things/`. The left sidebar menu is visible with options like Administration, Settings, Things, Model, Items, Pages, Rules, Scripts, Schedule, Developer Tools, and Help & About. The main content area is titled "Things" and shows a list of "2 things". The list includes "MQTT Broker" (bind: mqtt:broker:dingtianbroker) and "Relay7920" (bind: mqtt:topic:dingtianbroker:DingtianRelay7920). Both items are marked as "ONLINE". A search bar at the top of the list allows filtering by "Alphabetical" or "By binding". A blue "+" button is located in the bottom right corner of the main content area.

control relay

File Edit View History Bookmarks Tools Help

openHAB × +

localhost:8080/settings/model/ ⌂ site

Settings Semantic Model

Search

No pages

Administration

Settings >

Things

Model > **Model**

- Items
- Pages
- Rules
- Scripts
- Schedule

Developer Tools >

Help & About >

openHAB empowering the smart home

DingtianRelay7920-I1  
Point

DingtianRelay7920-I2  
Point

DingtianRelay7920-I3  
Point

DingtianRelay7920-I4  
Point

DingtianRelay7920-I5  
Point

DingtianRelay7920-I6  
Point

DingtianRelay7920-I7  
Point

DingtianRelay7920-I8  
Point

**DingtianRelay7920-R1**  
Point

DingtianRelay7920-R2  
Point

DingtianRelay7920-R3  
Point

DingtianRelay7920-R4  
Point

DingtianRelay7920-R5  
Point

DingtianRelay7920-R6  
Point

DingtianRelay7920-R7  
Point

DingtianRelay7920-R8  
Point

click to control relay

Analyze

Item

D DingtianRelay7920-R1  
Switch · Point  
DingtianRelay7920R1

Edit Remove

Metadata

Add Metadata

Channel Links

D Relay7920  
DingtianRelay7920-R1  
mqtt:topic:Dingtianbroker:DingtianRelay7920:R1 **ONLINE** >

Add Link

Clear  Show non-semantic