

IOT Relay User Manual

V1.9.6

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1 Product Overview

1.1 Overview

Support multiple channel relay, On/OFF/Jogging/Delay.
Support multiple interface RJ45/RS485/CAN/WIFI
Support HTTP GET CGI/UDP/TCP Server/TCP Client
10/100Mbps ethernet, Auto-MDIX,DHCP ip,Static IP
Local Button control(SelfLock/Jogging/Delay)
WEB config and control
Support password.
Support Modbus-RTU/ASCII/TCP/UDP/WIFI
Support Modbus-RTU Over TCP/UDP/WIFI
Support Modbus-ASCII Over TCP/UDP/WIFI
Support MQTT(Ethernet and WIFI)
Support CoAP
Support Domoticz
Support Home Assistant

Home Automation System Support:

Name	How to
Domoticz	Appendix II How to use Domoticz https://github.com/dtlzp/Domoticz-Dingtian-Relay-Plugin (Software version <=V2.16.xx, please use V1.1 for github; software version V2.17.xx or more, please use V1.2 for github)
Home Assistant	Appendix VI How to Home Assistant

Noted: when using Domoticz, please close your firewall or let your firewall allow the domoticz server port

SDK download link:

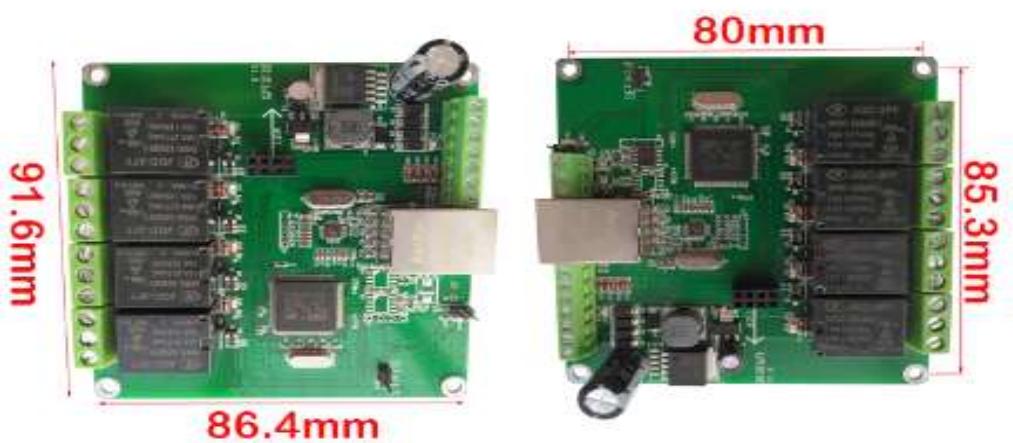
http://www.dingtian-tech.com/sdk/relay_sdk.zip

1.2 Technical Parameters

Network	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(Ethernet and WIFI) CoAP
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
Working environment	Operating temperature	0~+85°C
Power	Power Specifications	12/24VDC 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

Hole size: 3.5mm



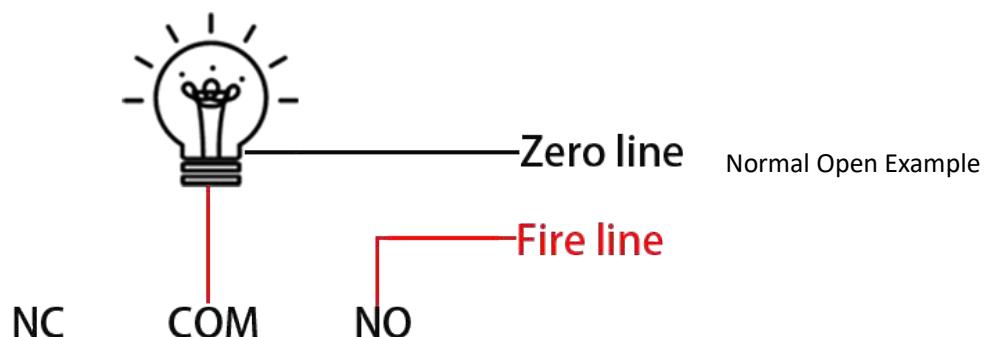
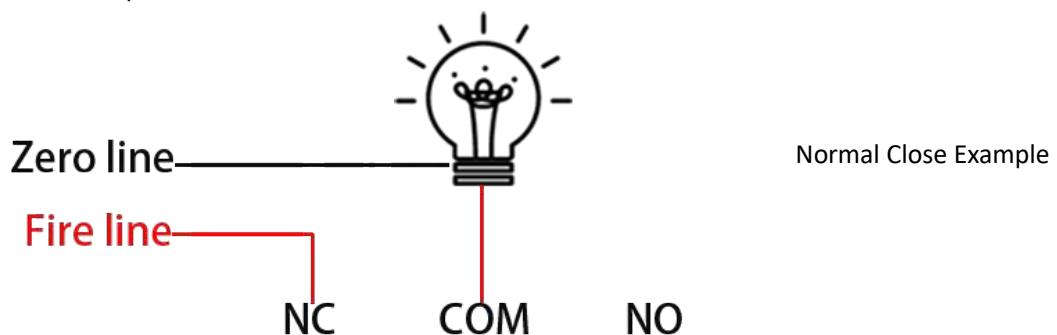
3 Interface Description

3.1 LED

wifi led	on: Connect WIFI successfully off: Disconnect WIFI
CH1-CH8 led	on: relay on off: relay off

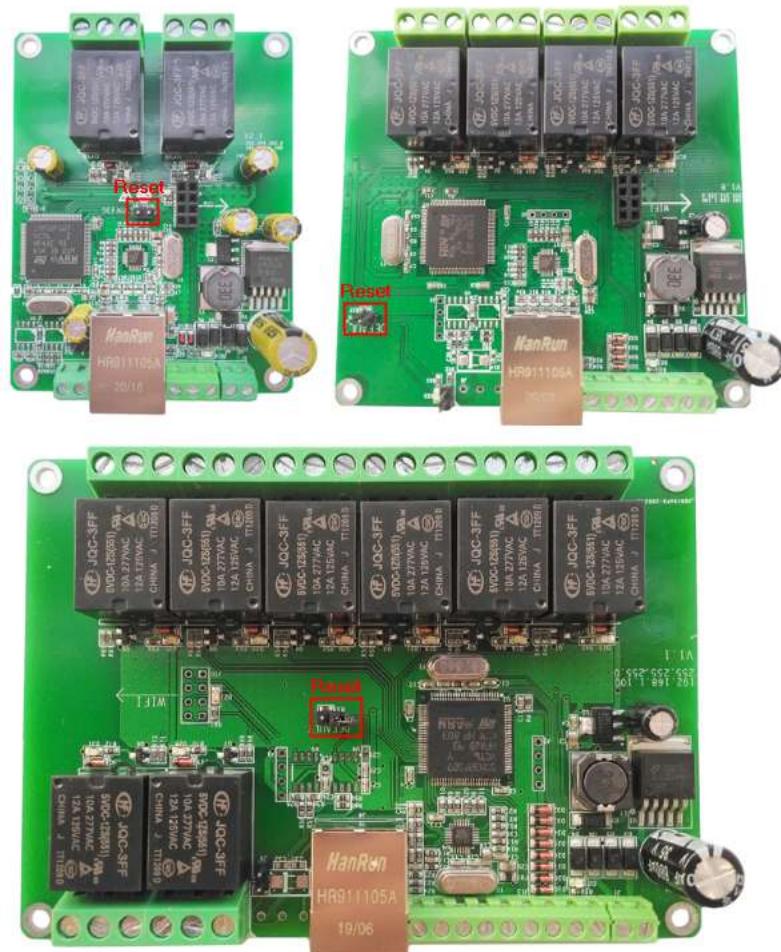
3.2 Relay Contact

Connect Example:



3.3 Reset To Factory

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

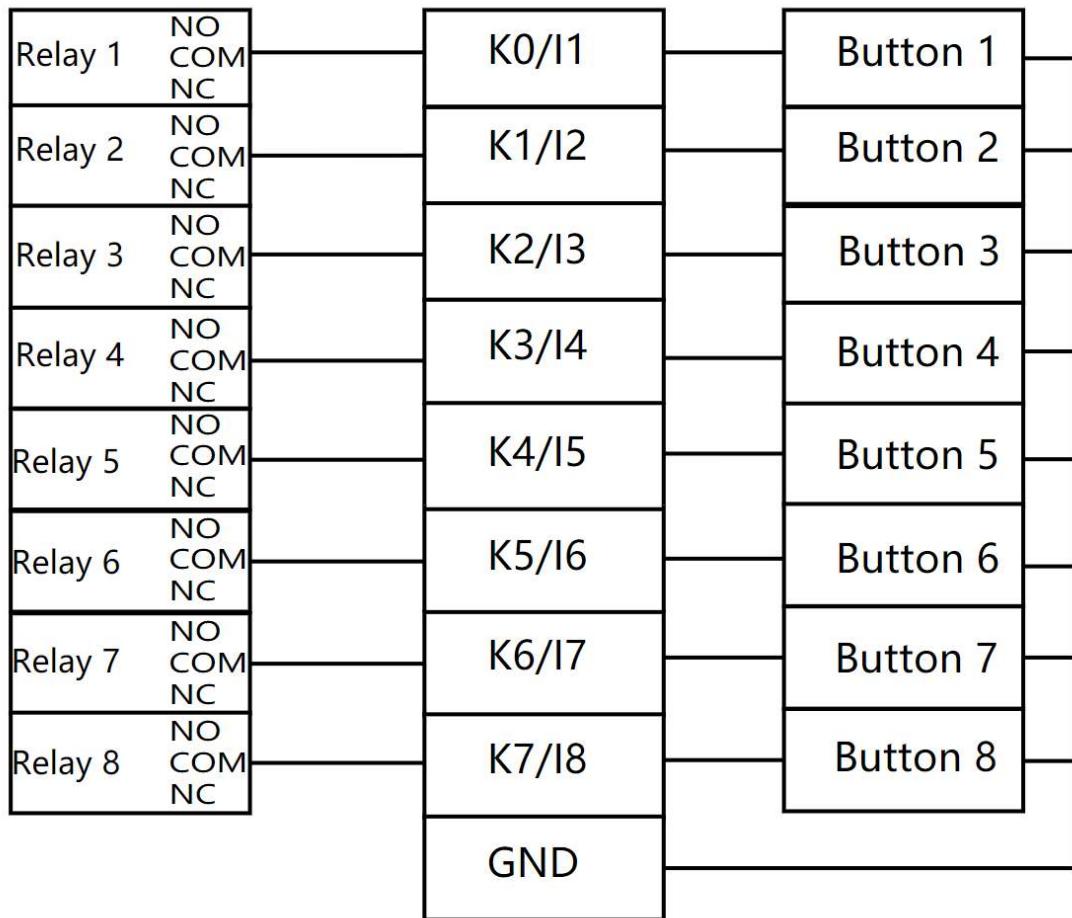
3.4 External input/Button control

K0~K7 Control Relay1~8

0V Relay On

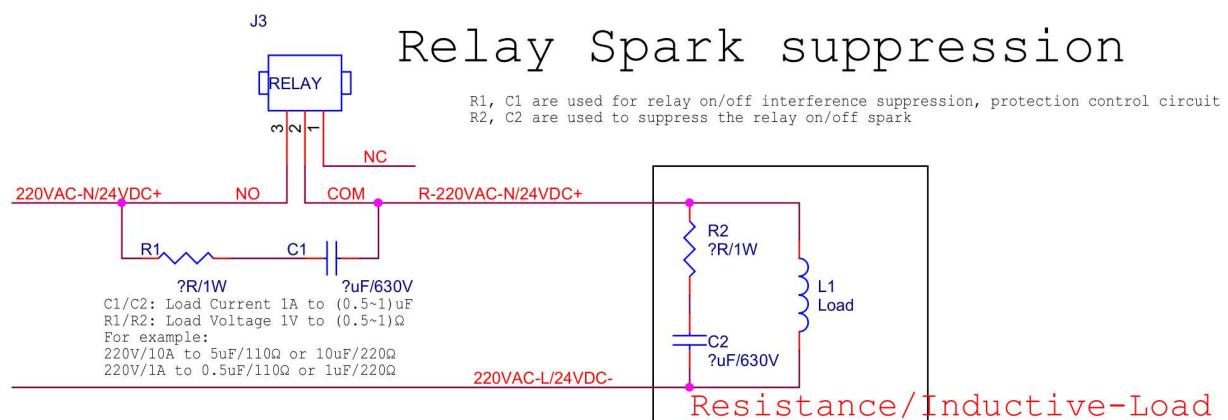
3.3V Relay Off (Hardware Version < V1.8)

3.3V/5V/12V/24V Relay Off (Hardware Version >= V1.8)

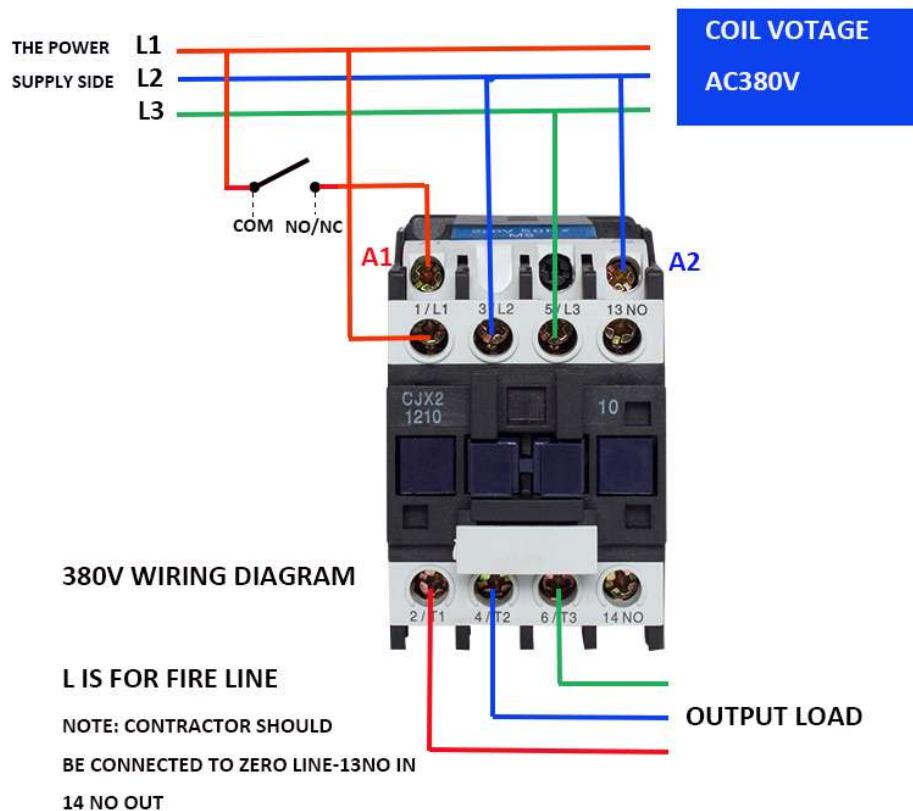


3.5 Add Spark killer and contractor

R1,C1 are used for relay on/off interference suppression, protection control circuit
 R2,C2 are used to suppress the relay on/off spark

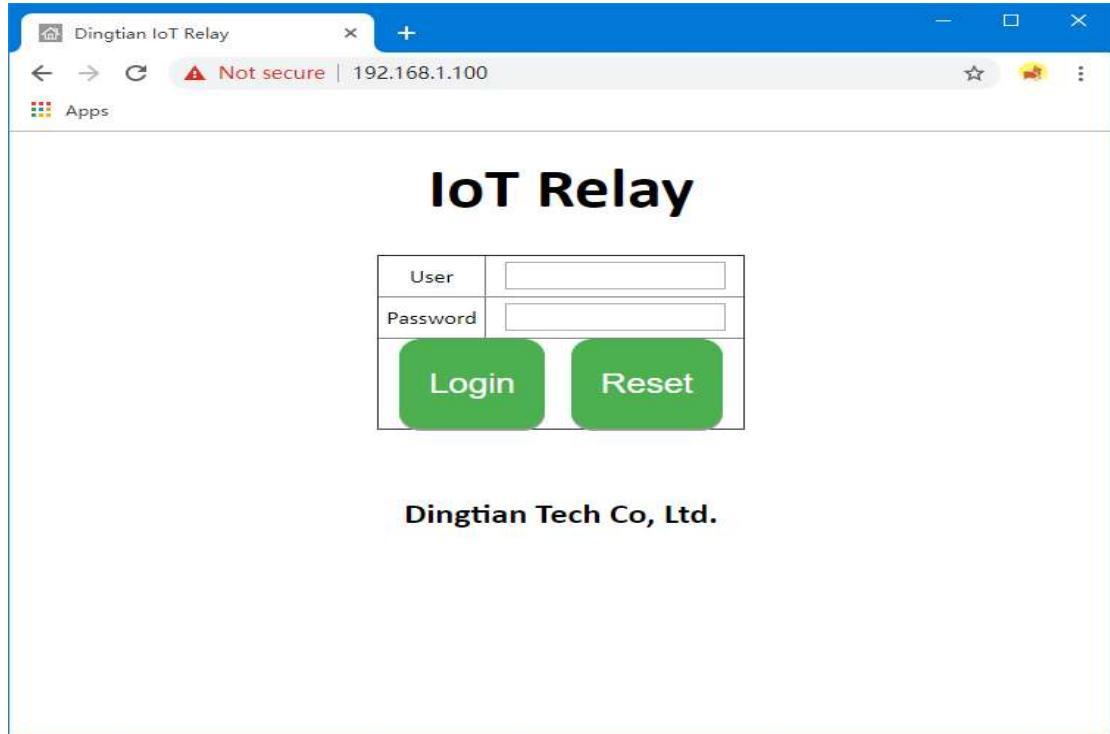


Our max current is 10A, if the current of your device is too big, suggest add a contractor



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 3.4 External input/Button control

The screenshot shows the 'Dingtian IOT Relay' configuration interface. The left sidebar has a 'Setting' menu with 'Relay Connect' highlighted. 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).
- Button Type:** A section where users can select the type of button for each relay channel (Momentary or Selflock).
- Save:** A green 'Save' button at the bottom of the configuration section.
- Relay Test:** A section at the bottom 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 Status' (On/Off), 'Jogging(1~255 100ms)', 'Delay(1~65535 Second)', 'On/Off', 'Jogging', and 'Delay'. The entire table is highlighted with a green background. Below the table, a message says 'Relay CGI load success!'

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', 'Month'), 'Week' (with days of the week listed), 'Month' (with months of the year listed), 'Day' (with days of the month listed), 'Minute' (with minutes listed), 'Second' (with seconds listed), and 'Interval'. The 'Repeat' column and the 'Month' through 'Interval' columns are highlighted with red boxes.

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

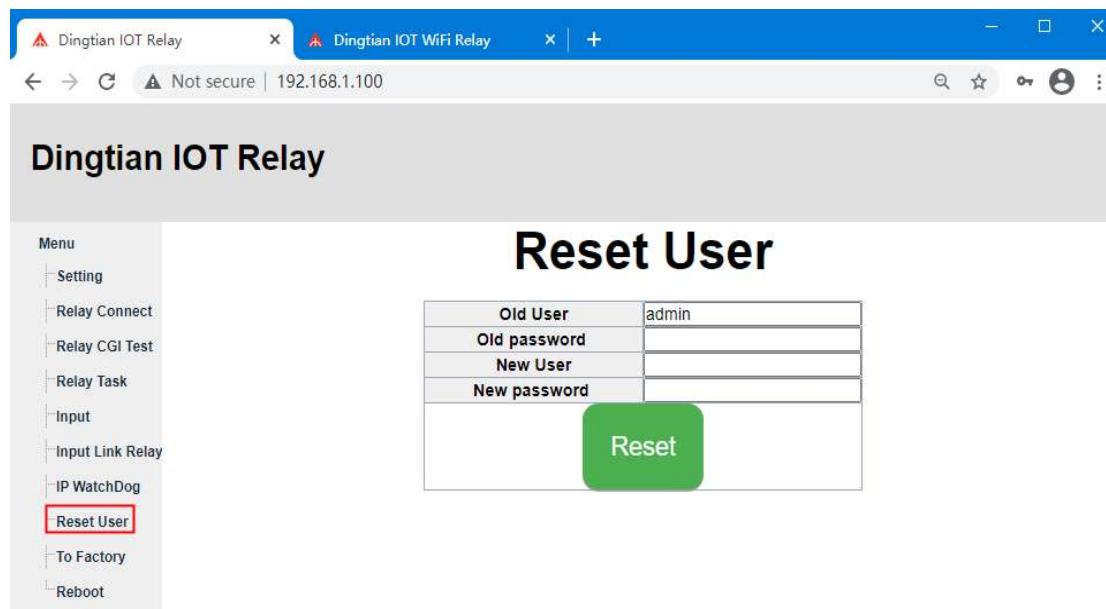
The screenshot shows the 'Input Link Relay' configuration page. On the left is a sidebar menu with options like Setting, Relay Connect, Relay CGI Test, Relay Task, Input, and Input Link Relay (which is highlighted with a red box). The main area contains a table titled 'Input Link Relay' with 18 rows (I1 to I8) and 5 columns: ON (Action ON), OFF (Action OFF), and three dropdowns for each row. 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.

4.8 IP WatchDog

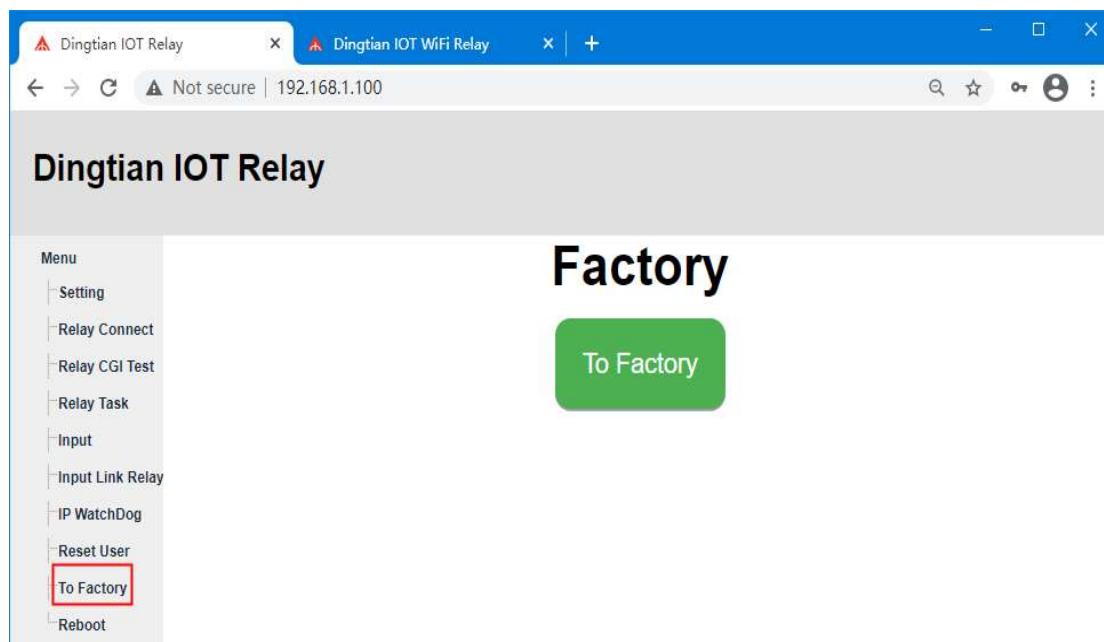
When Enable IP WatchDog function, all relay ON, when the "Watch IP" offline, relay OFF, after seconds, the relay ON automatically, "Ping Interval" must be bigger than "Ping Timeout"

The screenshot shows the 'IP WatchDog' configuration page. The sidebar menu includes IP WatchDog (highlighted with a red box). The main area features a table titled 'IP WatchDog' with 9 rows (1 to 9) and 11 columns: WatchDog, Enable, Off Relay, Watch IP, and various configuration parameters like Ping Interval, Ping Timeout, and 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 at the bottom, and a message 'load success!' is shown below it.

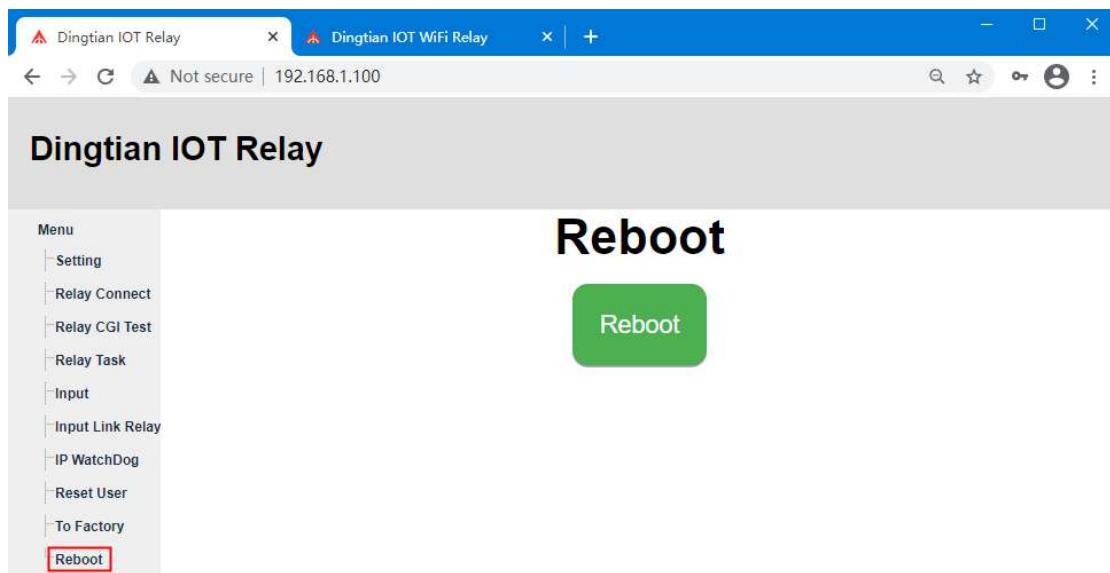
4.9 Reset User



4.10 To Factory



4.11 Reboot



5 WIFI web Page

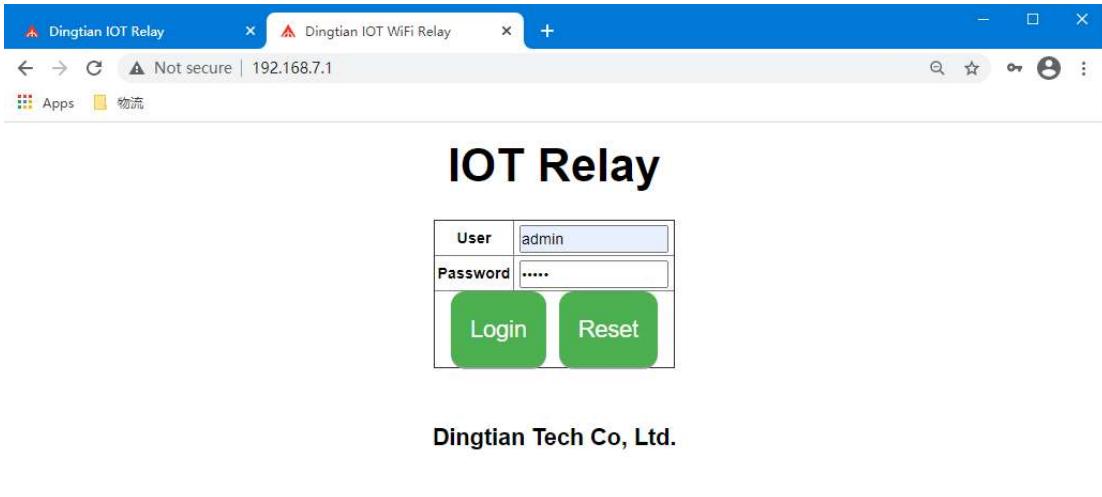
IE is not support, please use firefox and chrome

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

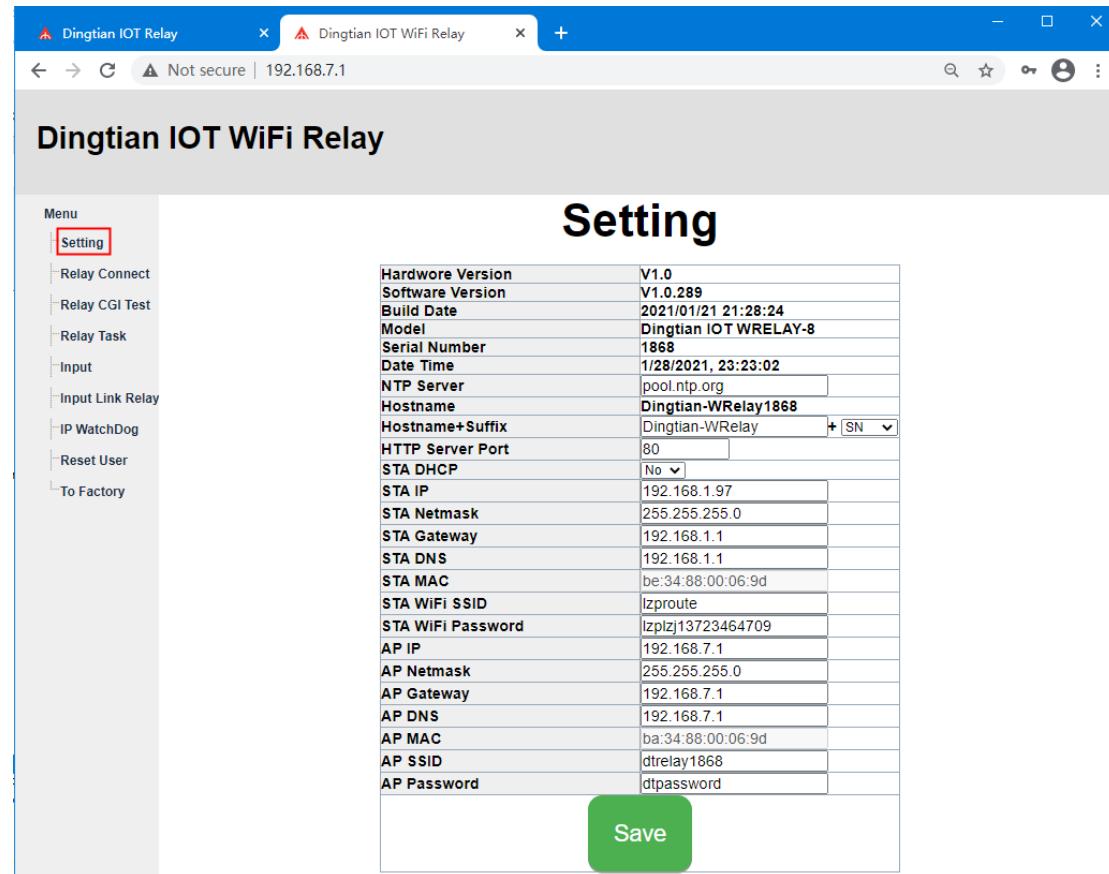
MAC: WIFI MAC address

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 Relay Dingtian IOT WiFi Relay Not secure | 192.168.7.1

Dingtian IOT WiFi Relay

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		502	
WIFI-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)
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" with the URL "Not secure | 192.168.7.1". The left sidebar menu includes "Setting", "Relay Connect", **Relay CGI Test** (selected), "Relay Task", "Input", "Input Link Relay", "IP WatchDog", "Reset User", and "To Factory". The main content area is titled "Relay CGI Test" and contains a table with 8 rows and 7 columns. The columns are: Relay, Status, Jogging(1~255 100ms), Delay(1~65535 Second), On/Off, Jogging, and Delay. Row 1 has "On" dropdowns for Jogging and Delay, and "Off" for Status and On/Off. Rows 2 through 8 have "Off" for all columns. A message at the bottom says "Relay CGI load success!".

Relay	Status	Jogging(1~255 100ms)		Delay(1~65535 Second)	On/Off	Jogging		Delay		
		On	Off			Do On	Do Jogging			
1	Off	On	Off	500ms	On	5	second	Do On	Do Jogging	Do Delay
2	Off	On	Off	500ms	On	5	second	Do On	Do Jogging	Do Delay
3	Off	On	Off	500ms	On	5	second	Do On	Do Jogging	Do Delay
4	Off	On	Off	500ms	On	5	second	Do On	Do Jogging	Do Delay
5	Off	On	Off	500ms	On	5	second	Do On	Do Jogging	Do Delay
6	Off	On	Off	500ms	On	5	second	Do On	Do Jogging	Do Delay
7	Off	On	Off	500ms	On	5	second	Do On	Do Jogging	Do Delay
8	Off	On	Off	500ms	On	5	second	Do On	Do Jogging	Do Delay

Relay CGI load success!

5.5 Relay Task

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

Dingtian IOT WiFi Relay

Not secure | 192.168.7.1/menu_page.html

Relay Task

Task	Enable	Relay Mode	On/Off	Delay/Jogging	Repeat	Week	Month	Day	Hour	Minute	Second	Interval
1	Yes	1	On/Off	On	No	SUN MON TUE WED THU FRI SAT	2	6	18	51	51	0
2	No	1	On/Off	On	Second	SUN MON TUE WED THU FRI SAT	1	1	0	0	0	0
3	No	1	On/Off	On	Minute	SUN MON TUE WED THU FRI SAT	1	1	0	0	0	0
4	No	1	On/Off	On	Hour	SUN MON TUE WED THU FRI SAT	1	1	0	0	0	0
5	No	1	On/Off	On	Day	SUN MON TUE WED THU FRI SAT	1	1	0	0	0	0
6	No	1	On/Off	On	Week	SUN MON TUE WED THU FRI SAT	1	1	0	0	0	0
					Month	SUN MON TUE WED THU FRI SAT						

5.6 Input

The screenshot shows a web browser window with two tabs: 'Dingtian IOT Relay' and 'Dingtian IOT WiFi Relay'. The address bar indicates the URL is 192.168.7.1. The main content area displays the title 'Dingtian IOT WiFi Relay'. On the left, a vertical menu lists several options: 'Setting', 'Relay Connect', 'Relay CGI Test', 'Relay Task', 'Input' (which is highlighted with a red box), 'Input Link Relay', 'IP WatchDog', 'Reset User', and 'To Factory'. The 'Input' option is currently selected. The right side of the page features a section titled 'Input Test' with a table showing the status of eight inputs (labeled 1 through 8). The table has a border and contains the following data:

	1	2	3	4	5	6	7	8
0	High							

Below the table, the word 'success!' is displayed.

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

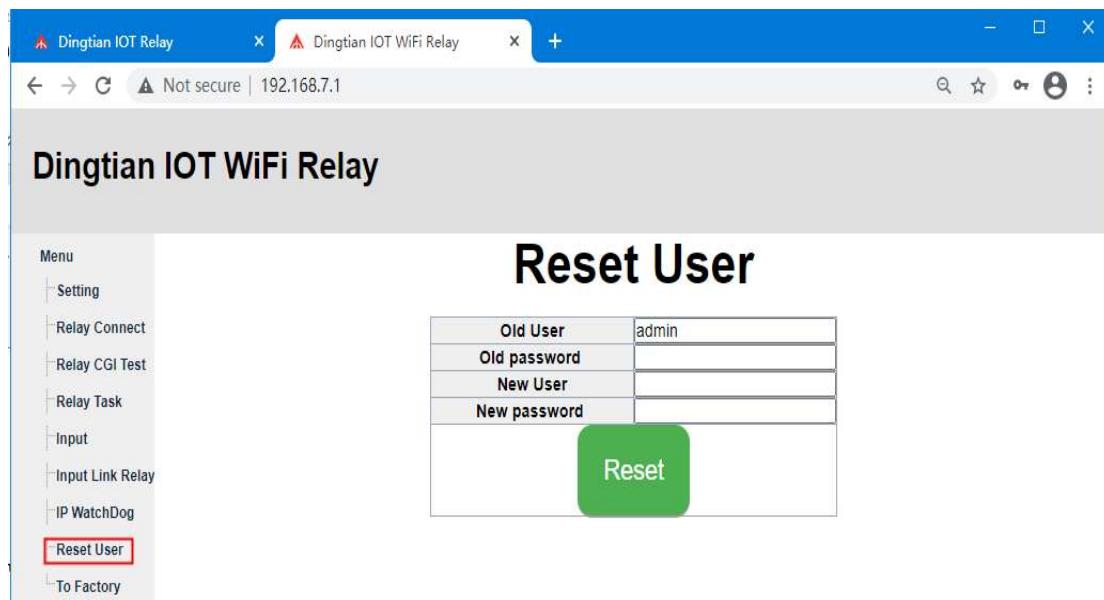
The screenshot shows the 'Dingtian IOT WiFi Relay' web interface. On the left, a vertical menu lists various options: Setting, Relay Connect, Relay CGI Test, Relay Task, Input, **Input Link Relay** (which is highlighted with a red box), IP WatchDog, Reset User, and To Factory. The main content area is titled 'Input Link Relay'. It contains a table with 8 rows (I1 to I8) and 8 columns (Action ON, R1, Action OFF, R1, Action ON, R1, Action OFF, R1). Each column has dropdown menus for selecting relay numbers (R1-R8). Below the table is a note: 'How to: Select Add/Click Delete'. A large green 'Save' button is centered at the bottom. A message 'load success!' is displayed below the save button.

5.8 IP WatchDog

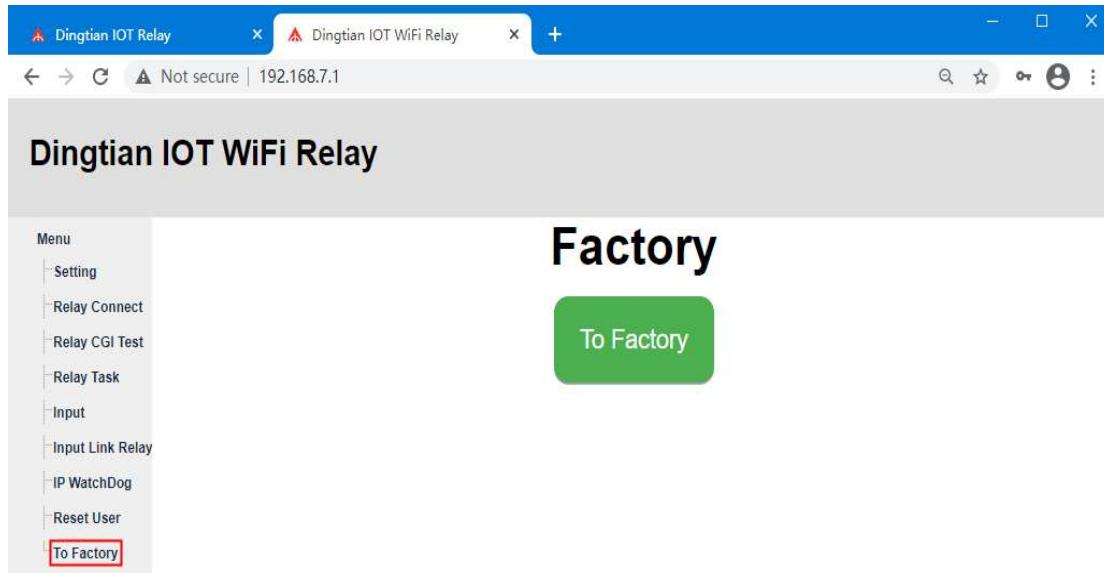
When Enable IP WatchDog function, all relay ON, when the "Watch IP" offline, relay OFF, after seconds, the relay ON automatically, **"Ping Interval"** must be bigger than **"Ping Timeout"**

The screenshot shows the 'Dingtian IOT WiFi Relay' web interface. The left menu includes: Setting, Relay Connect, Relay CGI Test, Relay Task, Input, **IP WatchDog** (highlighted with a red box), Reset User, and To Factory. The main area is titled 'IP WatchDog'. It features a table with 9 rows (1 offline to 9 offline) and columns for WatchDog, Enable, Off Relay, Watch IP, and various timing parameters (Ping Interval, Ping Timeout, Retry Times, Offline Action Time). A checkbox labeled 'Enable IP WatchDog' is located above the table. A note at the bottom states: 'Off Relay: Select Add/Click Delete' and 'Ping Interval Must Greater than Ping Timeout'. A large green 'Save' button is at the bottom, and a message 'load success!' is shown below it.

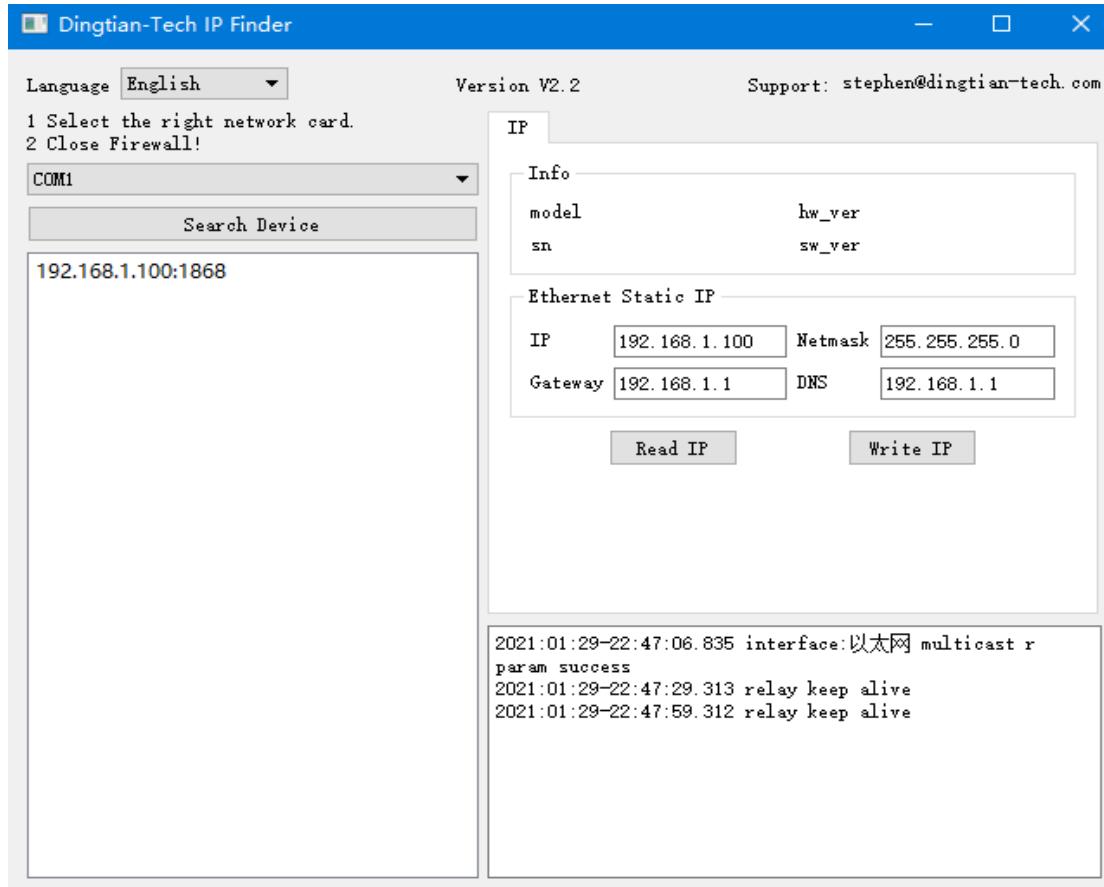
5.9 Reset User



5.10 To Factory

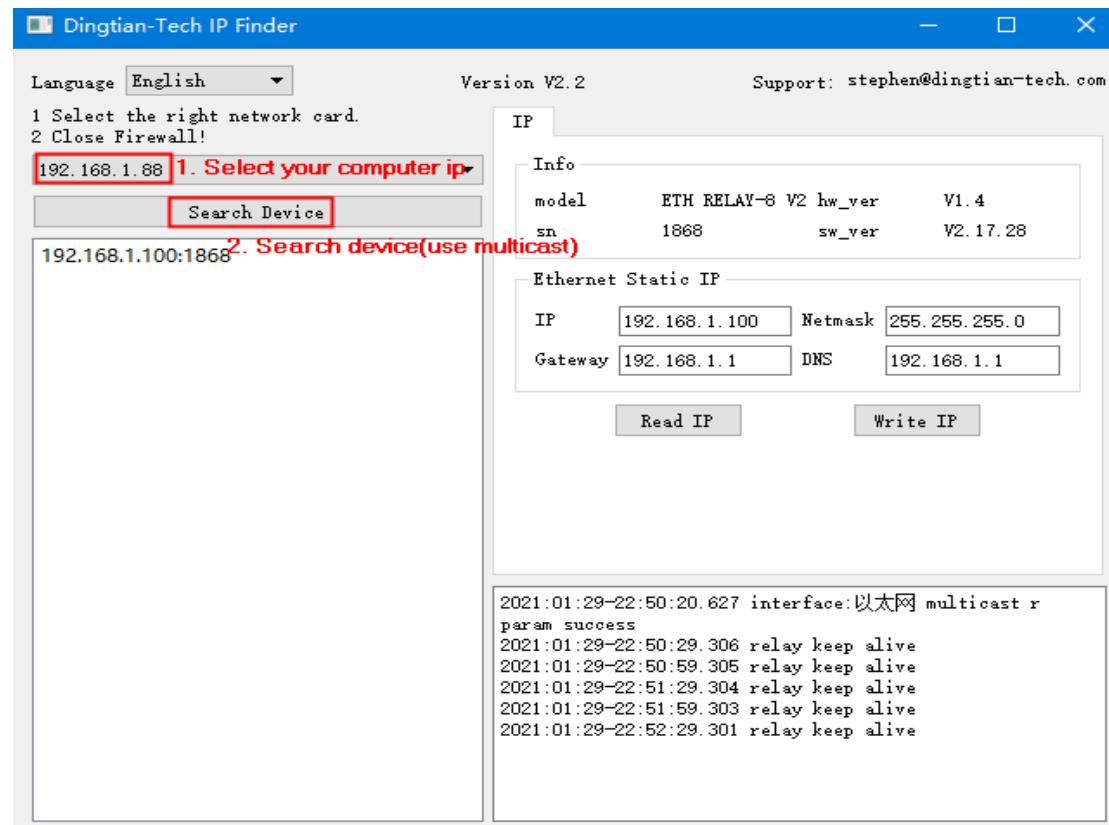


6 IP Finder



6.1 Search Device

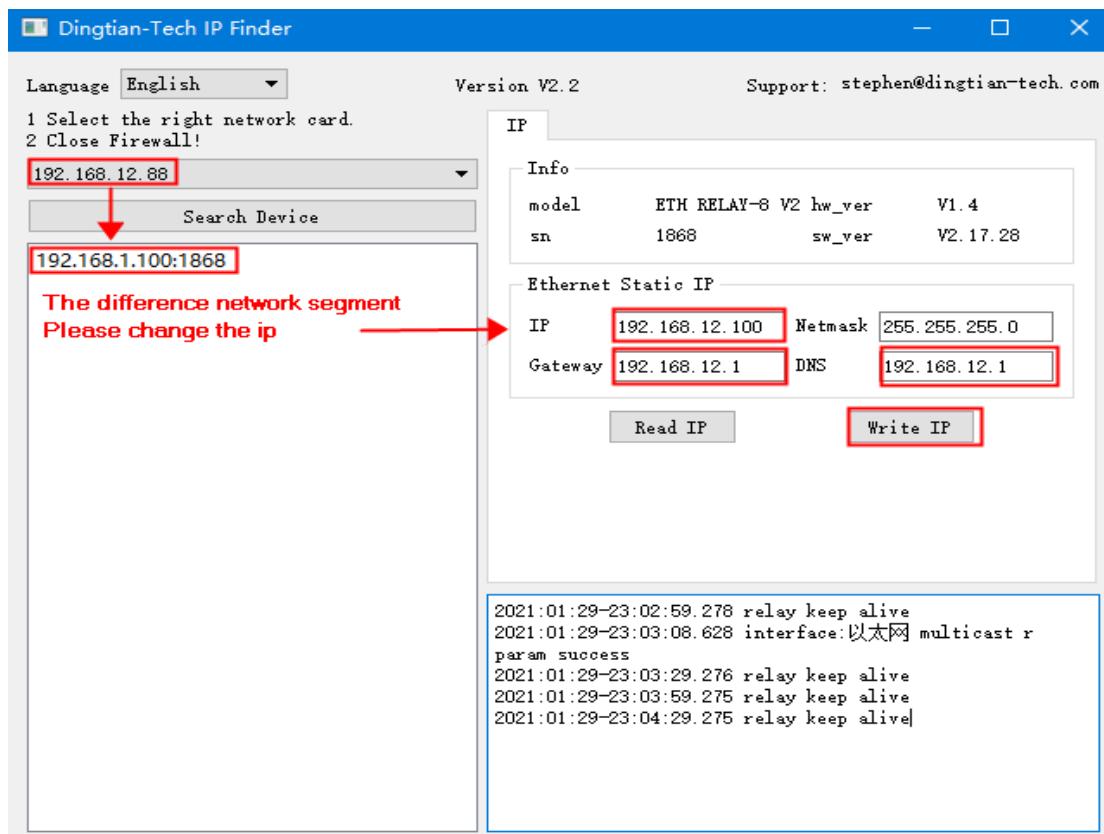
Note: When you use IP Finder to check your relay board ip, please keep your computer just connect with one relay board and the communication of relay board just has one(only Ethernet or WIFI)



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

unzip relay_sdk.zip

network tool name is net_test

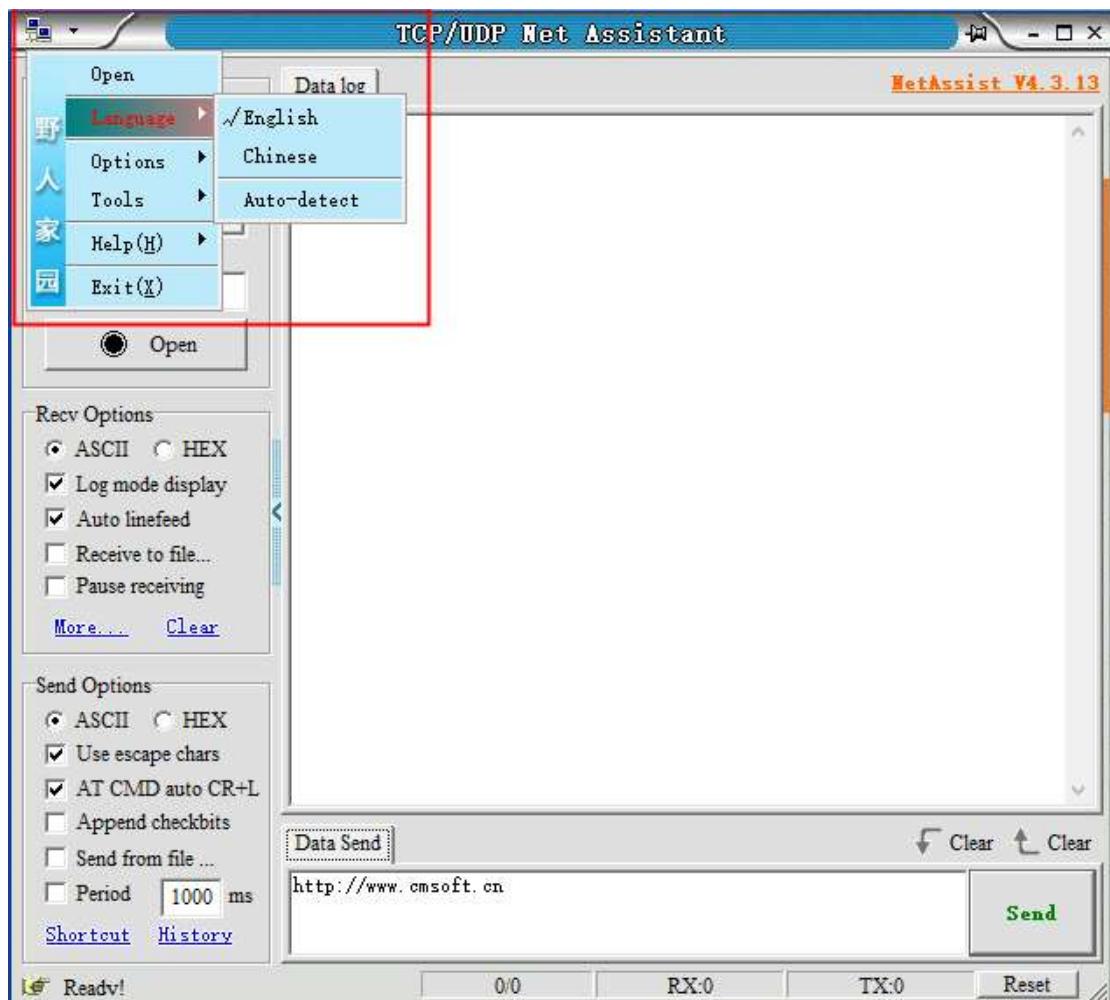
rs485 tool name is rs485_test

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

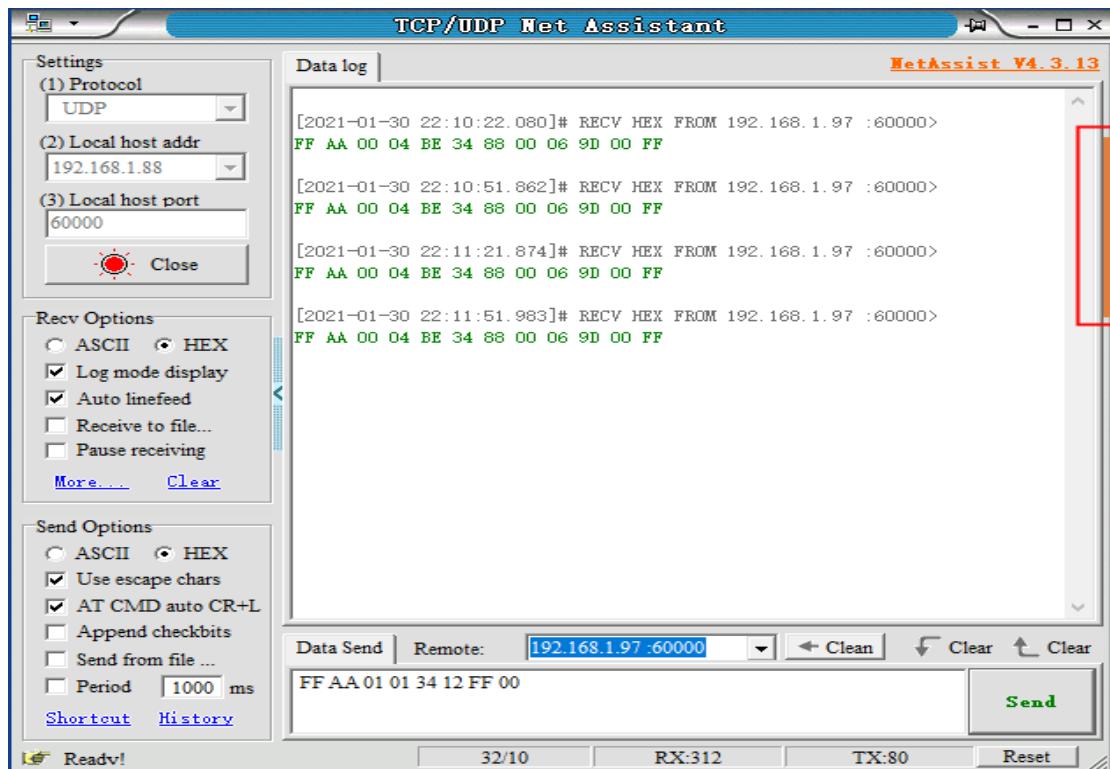
step 2: Change NetAssist language

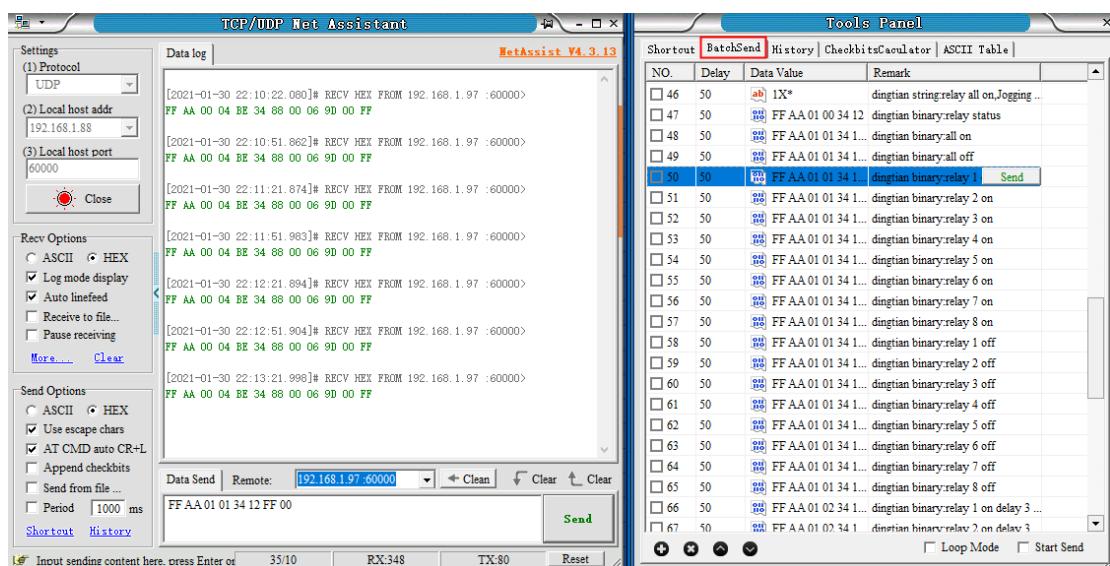
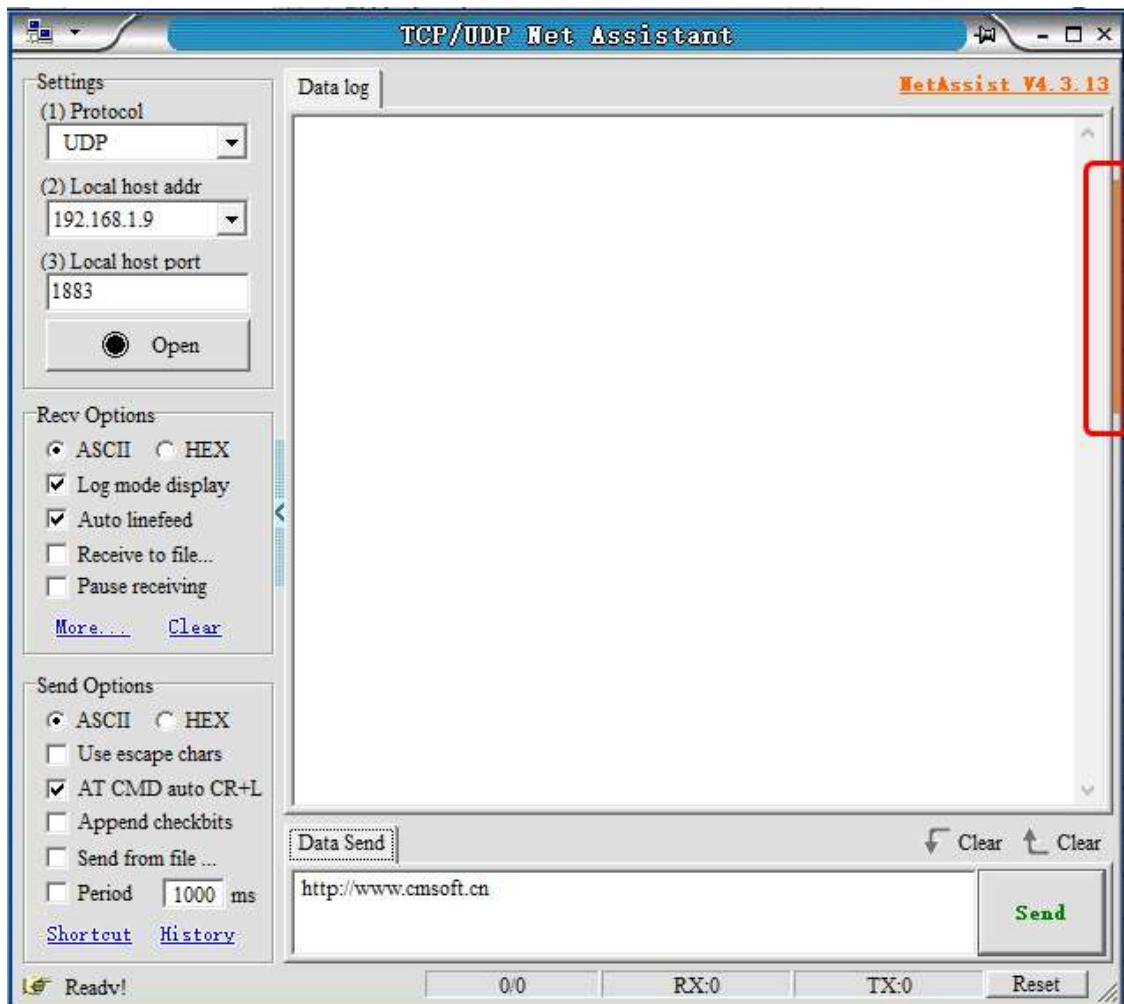


step 3: Control relay via NetAssist network tool by wifi module

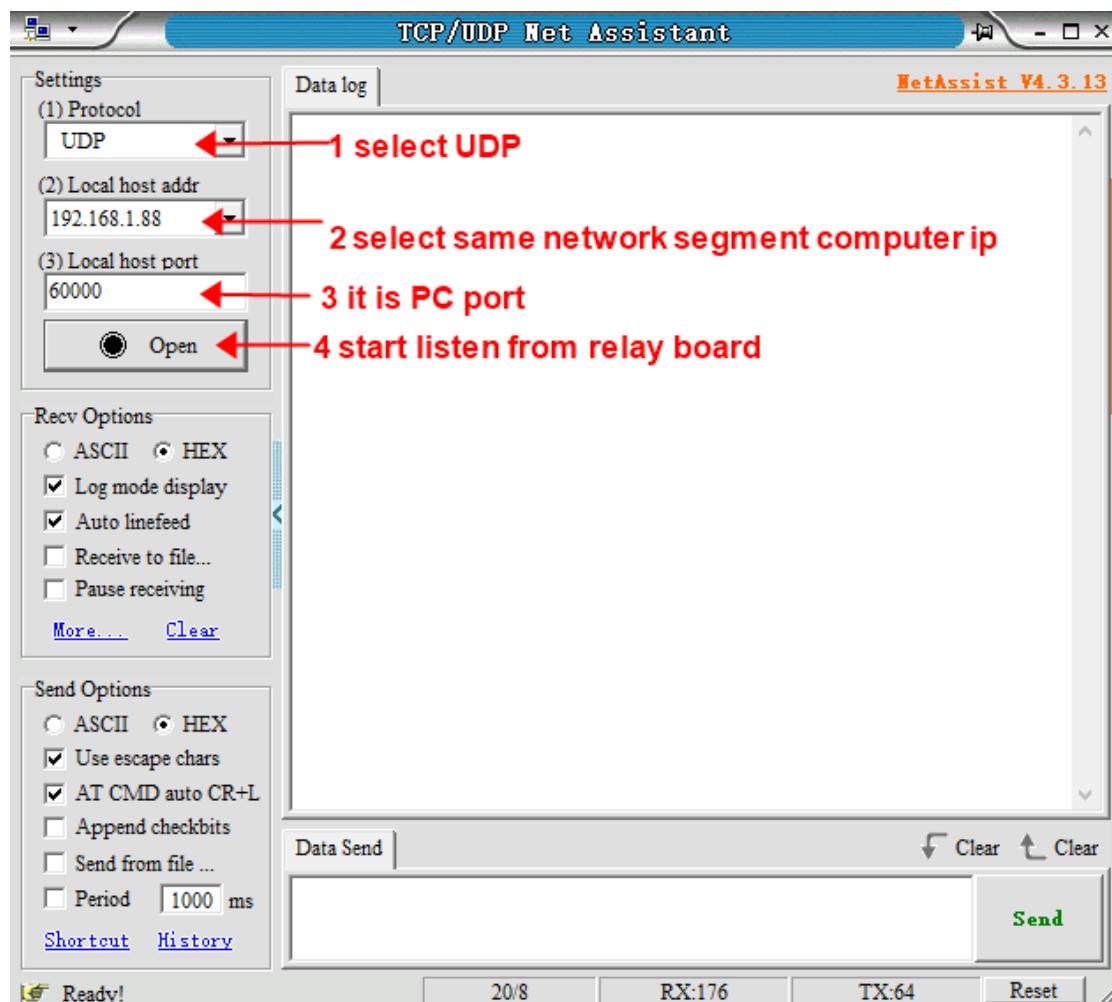
open NetAssist.exe

Shown in red box, open expansion panel

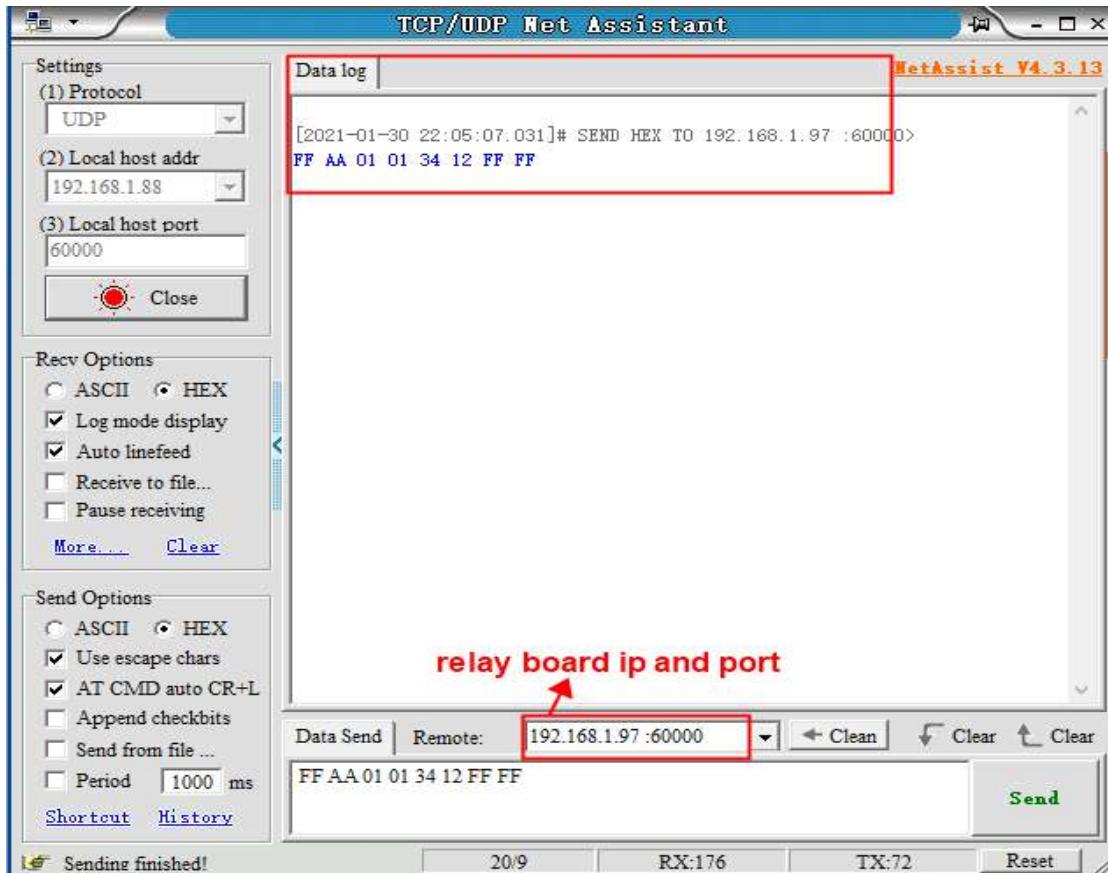




step 4: open UDP listen.



now relay board send relay status to pc via wifi module

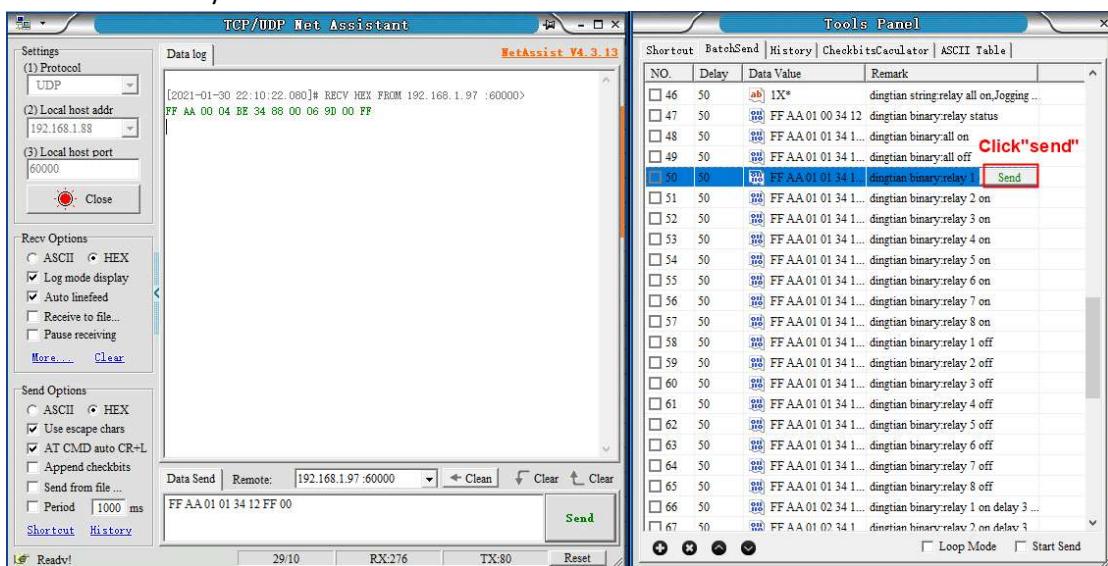


step 5: control relay via wifi module

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

Please install domotiz first

https://releases.domoticz.com/releases/release/domoticz_windows_x86.zip

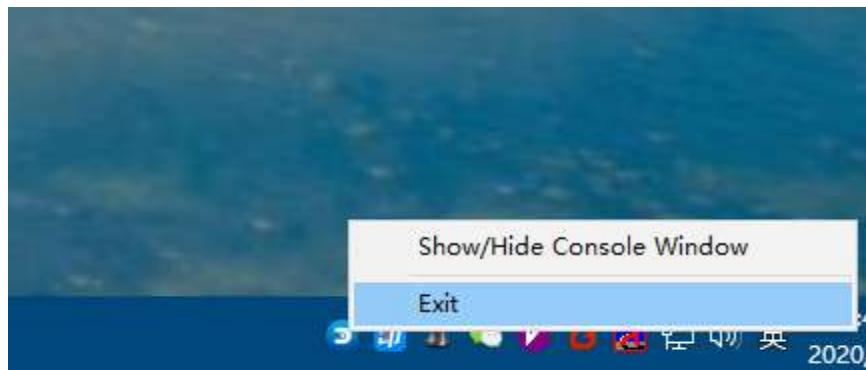
step 1: install Dingtian plugin to Domoticz

Dingtian plugin find in SDK or github

http://www.dingtian-tech.com/sdk/relay_sdk.zip

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

1 Stop Domoticz



2 Copy Domoticz_plugins\dingtian to Domoticz plugin dir



to Domoticz install dir



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 is a sidebar with a 'Relay Connect' button highlighted with a red box. The main area is titled 'Relay' and contains a table for configuring various communication channels. The table includes columns for Channel, Protocol, Addr, Baud, Databits, Stopbits, Parity, Remote Address, Remote Port, Local Port, Domoticz server address, and Broker Address.

Step 1: The 'Relay Connect' button is highlighted with a red box.

Step 2: The 'ETH-UDP1' and 'ETH-UDP2' sections are highlighted with a red box. The 'Domoticz server address' field for ETH-UDP1 is also highlighted.

Step 3: The 'Other' section at the bottom is highlighted with a red box. The 'Relay Password' and 'Keep Alive Second' fields are highlighted.

Step 4: The 'Save' button is highlighted with a red box.

Relay Test: Below the configuration table, there are eight green rounded rectangles, each containing a relay identifier and an 'Off' status indicator. From left to right, they are: Relay1:Off, Relay2:Off, Relay3:Off, Relay4:Off, Relay5:Off, Relay6:Off, Relay7:Off, and Relay8:Off.

Domoticz WIFI

The screenshot shows the 'Dingtian IOT WiFi Relay' configuration interface. On the left, a sidebar lists various menu items: Setting, Relay Connect (highlighted with a red box and labeled 1), Relay CGI Test, Relay Task, Input, Input Link Relay, IP WatchDog, Reset User, and To Factory. The main content area is titled 'Relay' and contains a table for 'Relay Connect'. The table has five rows:

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	Domoticz server address		Local Port
WIFI-TCP Client	Modbus-RTU Over TCP	Remote Address	Remote Port	502

Below the table is an 'Other' section with three input fields:

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

A green 'Save' button is located below the 'Other' section (labeled 4). At the bottom, there is a 'Relay Test' section with eight buttons labeled 'Relay1:Off' through '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

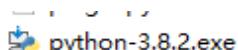
1 Install Python 3.8.2

download link:

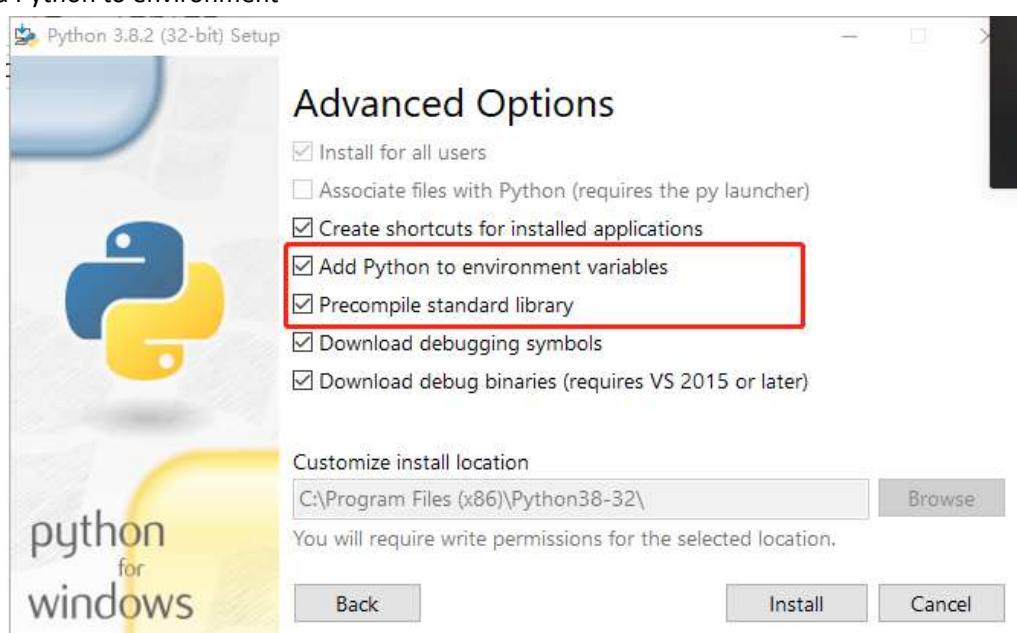
<https://www.python.org/ftp/python/3.8.2/python-3.8.2.exe>

Notice: Domoticz only support 32bit Python

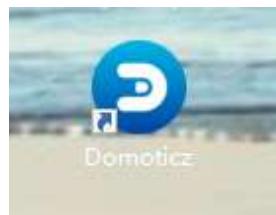
after download, install it



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 (which is currently selected), Scenes, Temperature, Weather, Utility, and Setup. A red box highlights the 'Setup' dropdown menu. The main content area displays the message "No Lights/Switches found or added in the system...". On the right, a vertical sidebar menu is open, also with a red box highlighting the 'Hardware' option. Other options in the sidebar include Devices, Settings, Check for Update, More Options, Log, and About.

2 Input Dingtian Relay config(Ethernet)

The screenshot shows the 'Hardware' configuration page in the Domoticz web interface. At the top, there is a table header with columns: Idx, Name, Enabled, Type, Address, Port, and Data Timeout. Below the header, it says "Showing 0 to 0 of 0 entries". There are "Update" and "Delete" buttons at the bottom of this section. The main configuration area contains the following fields:

- Enabled: 1
- Name: 1
- Type: 2
- Data Timeout: 2
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
- IP Address: 3
- Port: 4
- Channel Count: 5
- Password: 6
- Debug: 7

At the bottom, there is a blue "Add" button with the number "8" next to it.

3. Input Dingtian Relay config(WIFI)

The screenshot shows the Domoticz software interface for configuring hardware devices. The top navigation bar includes links for Dashboard, Switches, Scenes, Temperature, Weather, Utility, and Setup. The main content area displays a table for hardware entries, which is currently empty. Below the table, there are configuration fields for a new device:

- 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
Dingtian-tech Relay Domoticz Plugin.
- IP Address: 192.168.1.97 4
- Port: 60001 5
- Channel Count: 8 6
- Password: 0
- Debug: False 7

At the bottom left is a blue "Add" button with the number 8 next to it. The footer of the page includes the copyright notice: © 2012-2021 Domoticz | WWW. Domoticz.com.

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 software interface displaying a list of hardware configurations. The table header includes columns for Idx, Name, Enabled, Type, Address, Port, and Data Timeout. Two entries are listed:

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

The second entry (Idx 2) is highlighted with a red border. Below the table, there is a detailed configuration panel for the selected device (Idx 2):

- Enabled:
- Name: dingtian-relay
- Type: Dingtian Relay
- Data Timeout: Disabled 1
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
Dingtian-tech Relay Domoticz Plugin.
- IP Address: 192.168.1.100
- Port: 60001
- Channel Count: 8
- Password: 0
- Debug: False

At the bottom left is a blue "Add" button with the number 2 next to it. The footer of the page includes the copyright notice: © 2012-2021 Domoticz | WWW. Domoticz.com.

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

The screenshot shows the 'Add Device' configuration page. The 'Type' is set to 'Dingtian Relay'. The 'Port' field is highlighted with a red box and contains the value '60003'. The 'Add' button at the bottom is blue.

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

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	502			
ETH-MQTT	MQTT	192.168.1.88	1883	Broker Username	Broker Password	

5 Add Relay to Switches Page

Domoticz 2020.2

Dashboard | Switches | Scenes | Temperature | Weather | Utility | **Setup**

Show 25 entries

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

Showing 1 to 8 of 8 entries

First Previous 1 Next Last

Click Add Device to use Relay

Domoticz 2020.2

Dashboard | Switches | Scenes | Temperature | Weather | Utility | **Setup**

Show 25 entries

	Idx	Hardware	ID	Unit	Name	Type	SubType	Data	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

Click Add Device to confirm

→ C 127.0.0.1:8080/#/Devices

应用

Domoticz 2020.2

Used All Devices Not Used Refresh

Show 25 entries Search: Last Seen

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

Add Device

Name: dingtian-relay - RELAY7

As: Main Device Sub/Slave Device

Add Device Cancel

result

→ C 127.0.0.1:8080/#/Devices

应用

Domoticz 2020.2

Used All Devices Not Used Refresh

Show 25 entries Search: Last Seen

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

dingtian-relay - RELAY7

dingtian-relay - RELAY8

dingtian-relay - RELAY2

dingtian-relay - RELAY3

dingtian-relay - RELAY4

dingtian-relay - RELAY5

dingtian-relay - RELAY6

dingtian-relay - RELAY1

4 Control Dingtian Relay with Domoticz

Switch “**Switches**” page

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 buttons for Log, Edit, Timers, and Notifications.

Click light icon to control relay

The screenshot shows the Domoticz interface with the 'Switches' tab selected. The relay card for RELAY1 has been interacted with:

- dingtian-relay - RELAY1: Off. Last Seen: 2020-04-30 10:26:12. Type: Light/Switch, Switch, On/Off. A red box highlights the light bulb icon.
- 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 buttons for Log, Edit, Timers, and Notifications.

2020-04-30 10:37:40 ★▲05:52 ▼18:50

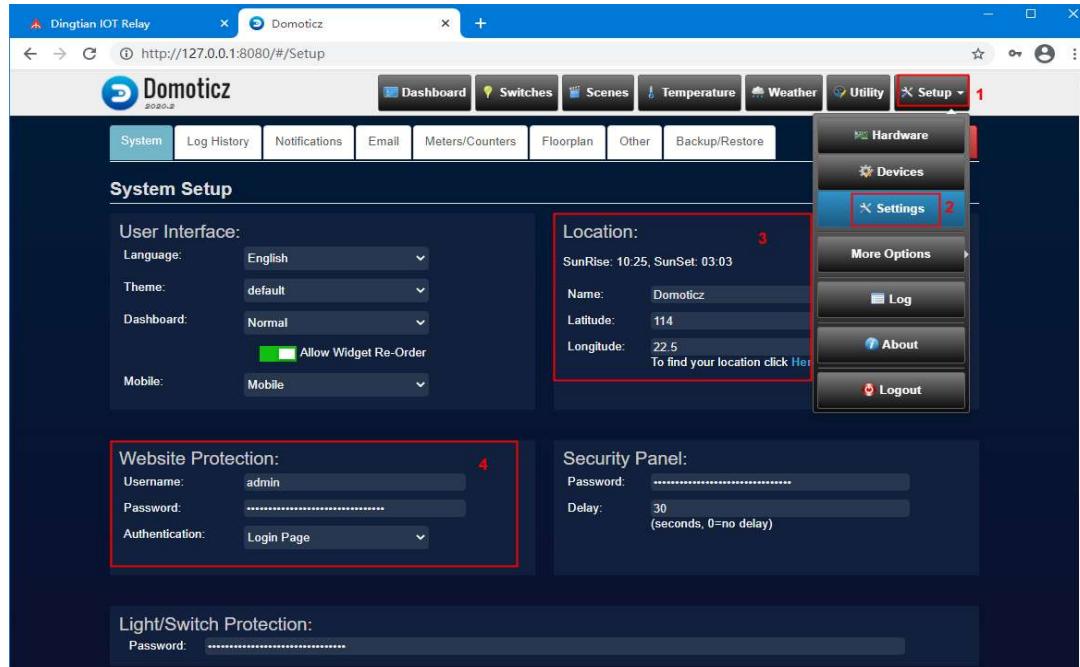
◀ Manual Light/Switch Learn Light/Switch ▶

dingtian-relay - RELAY1 On Last Seen: 2020-04-30 10:37:36 Type: Light/Switch, Switch, On/Off Log Edit Timers Notifications	dingtian-relay - RELAY2 Off Last Seen: 2020-04-30 10:26:13 Type: Light/Switch, Switch, On/Off Log Edit Timers Notifications	dingtian-relay - RELAY3 Off Last Seen: 2020-04-30 10:26:13 Type: Light/Switch, Switch, On/Off Log Edit Timers Notifications
dingtian-relay - RELAY4 Off Last Seen: 2020-04-30 10:26:13 Type: Light/Switch, Switch, On/Off Log Edit Timers Notifications	dingtian-relay - RELAY5 Off Last Seen: 2020-04-30 10:26:13 Type: Light/Switch, Switch, On/Off Log Edit Timers Notifications	dingtian-relay - RELAY6 Off Last Seen: 2020-04-30 10:26:13 Type: Light/Switch, Switch, On/Off Log Edit Timers Notifications
dingtian-relay - RELAY7 Off Last Seen: 2020-04-30 10:26:14 Type: Light/Switch, Switch, On/Off Log Edit Timers Notifications	dingtian-relay - RELAY8 Off Last Seen: 2020-04-30 10:37:28 Type: Light/Switch, Switch, On/Off Log Edit Timers Notifications	

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

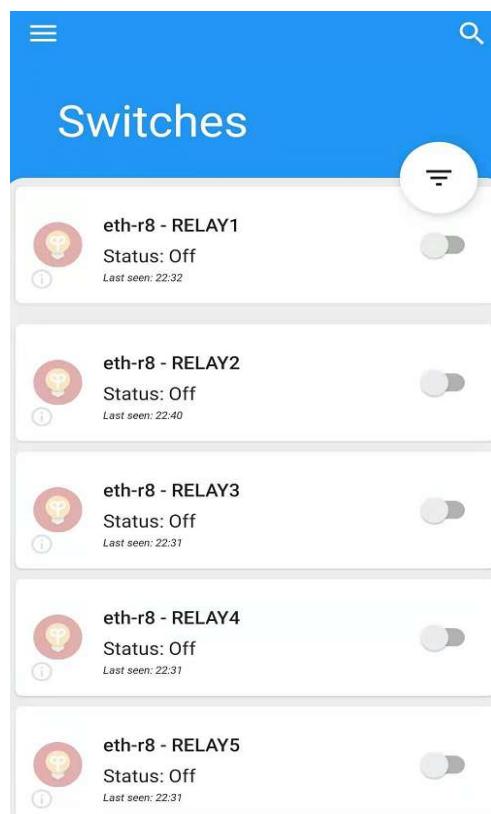
Server address
192.168.1.88

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 main content is the "Setting" page for the relay. On the left is a sidebar menu with options like "Setting", "Relay Connect", "Relay CGI Test", etc. The main area has a table of settings:

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	1/30/2021, 22:47:00
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

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

MQTT WIFI

A Dingtian IOT Relay x A Dingtian IOT WiFi Relay x | +

Not secure | 192.168.1.100/menu_page.html

Dingtian IOT Relay

Setting

Menu

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

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	1/30/2021, 22:47:00
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

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

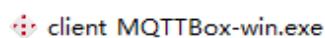


1 config “mosquitto.conf”
bind_address 0.0.0.0
port 1883

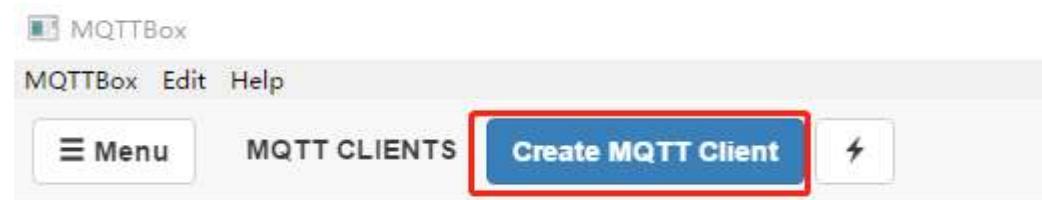
2 start windows Service “mosquitto”



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	
		Save	Delete

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

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	192.168.1.88	Remote Address	Remote Port	Local Port	
ETH-UDP2	Dingtian String	192.168.1.88	Remote Address	Remote Port	Local Port	
ETH-TCP Server	Modbus-TCP				Local Port	502
ETH-TCP Client	Modbus-RTU Over TCP	192.168.1.9	Remote Address	Remote Port		
ETH-MQTT	MQTT	192.168.1.88	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)
Jogging Time	5 1~255 (1=100ms)
Power Failure Recovery Relay	No
Input Control Relay	Yes

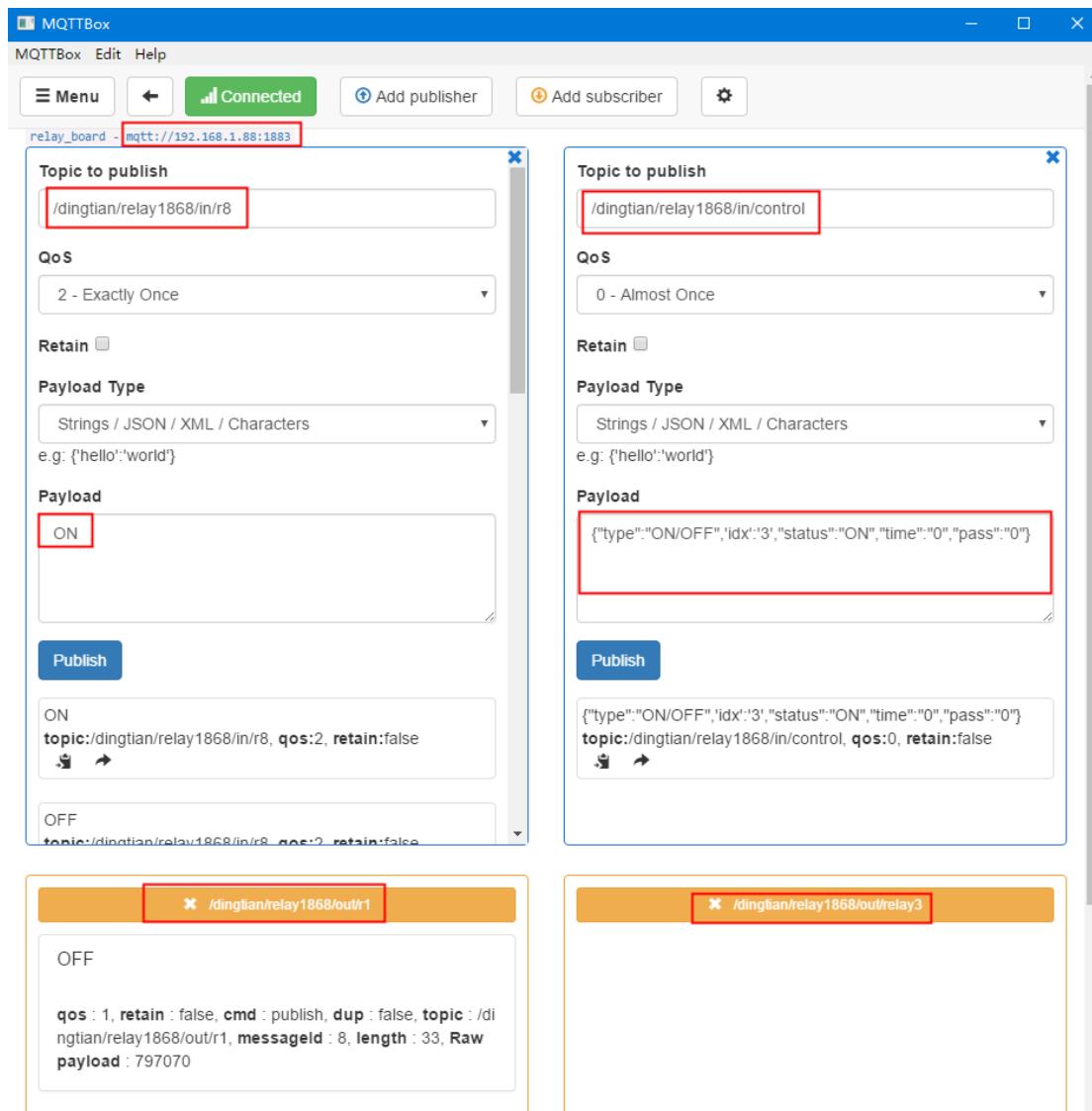
Save

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	Other Relay Board IP	Remote Port	Local Port	
ETH-TCP Server	Modbus-TCP			502		
ETH-TCP Client	Modbus-RTU Over TCP	192.168.1.9	Remote Address	Remote Port		
ETH-MQTT	MQTT	192.168.1.9	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)
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	
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

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				Local Port	
TCP Client	Modbus-RTU Over TCP	192.168.1.9	Remote Address	Remote Port	502	
MQTT	MQTT	192.168.1.9	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 #####
```

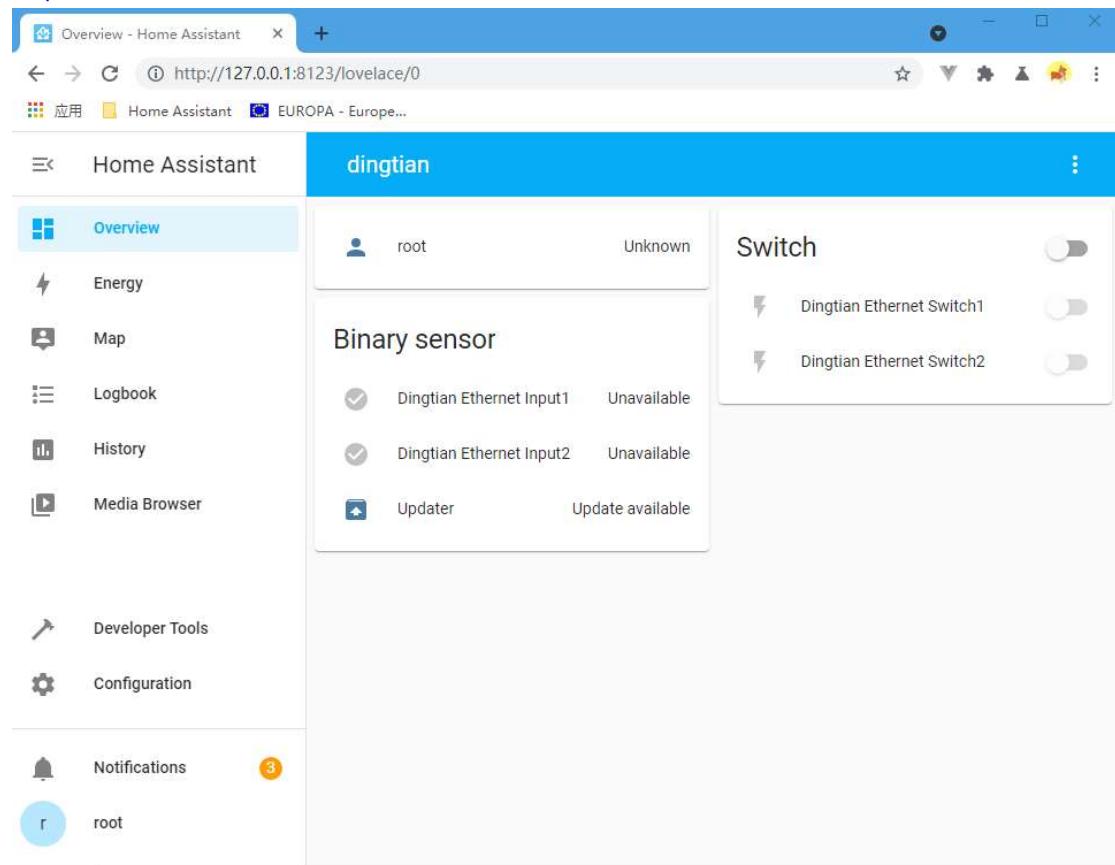
4 Home Assistant config MQTT Broker

Windows open Home Assistant command:

`hass -open-ui`

Home Assistant web link:

<http://127.0.0.1:8123/>



config MQTT Broker

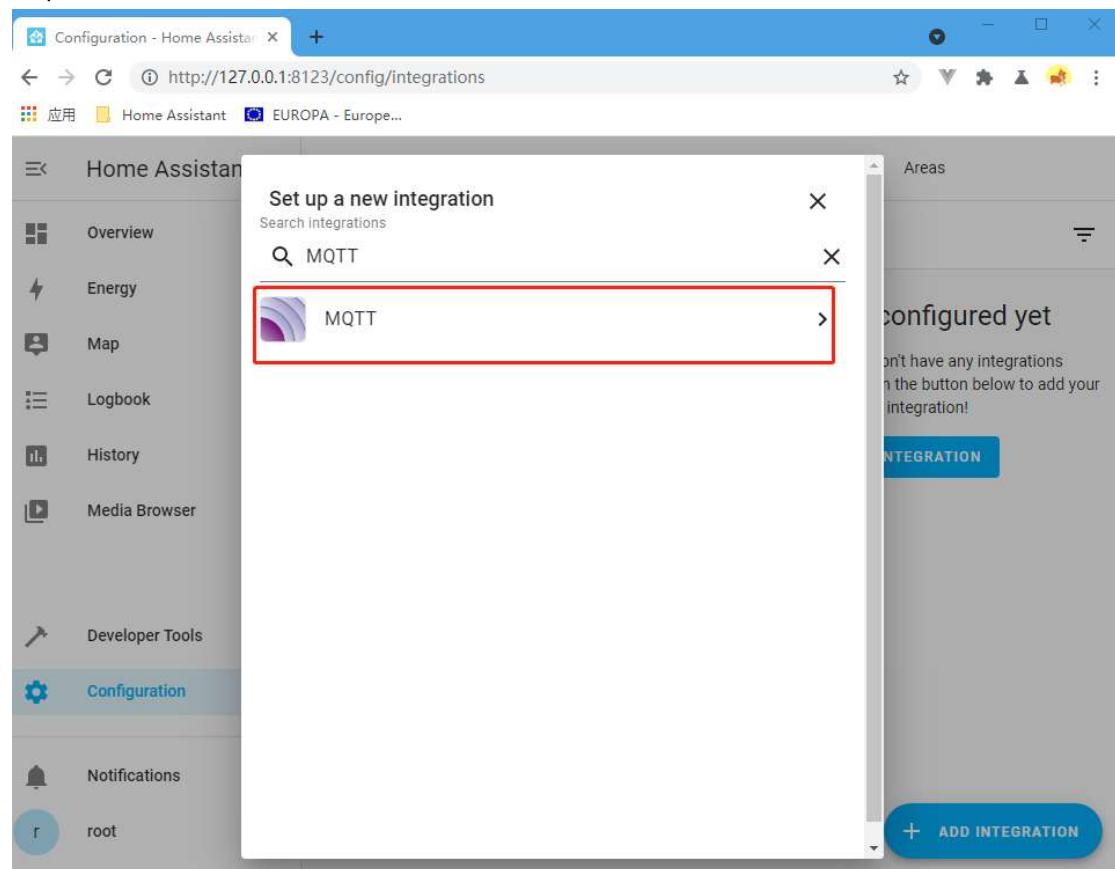
step 1

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 (labeled 1). The main content area is titled 'Configure Home Assistant' and contains a section for 'Home Assistant Cloud' and a list of management options: 'Integrations' (labeled 2), 'Devices', 'Entities', 'Areas', and 'Blueprints'. A red box highlights the 'Integrations' option.

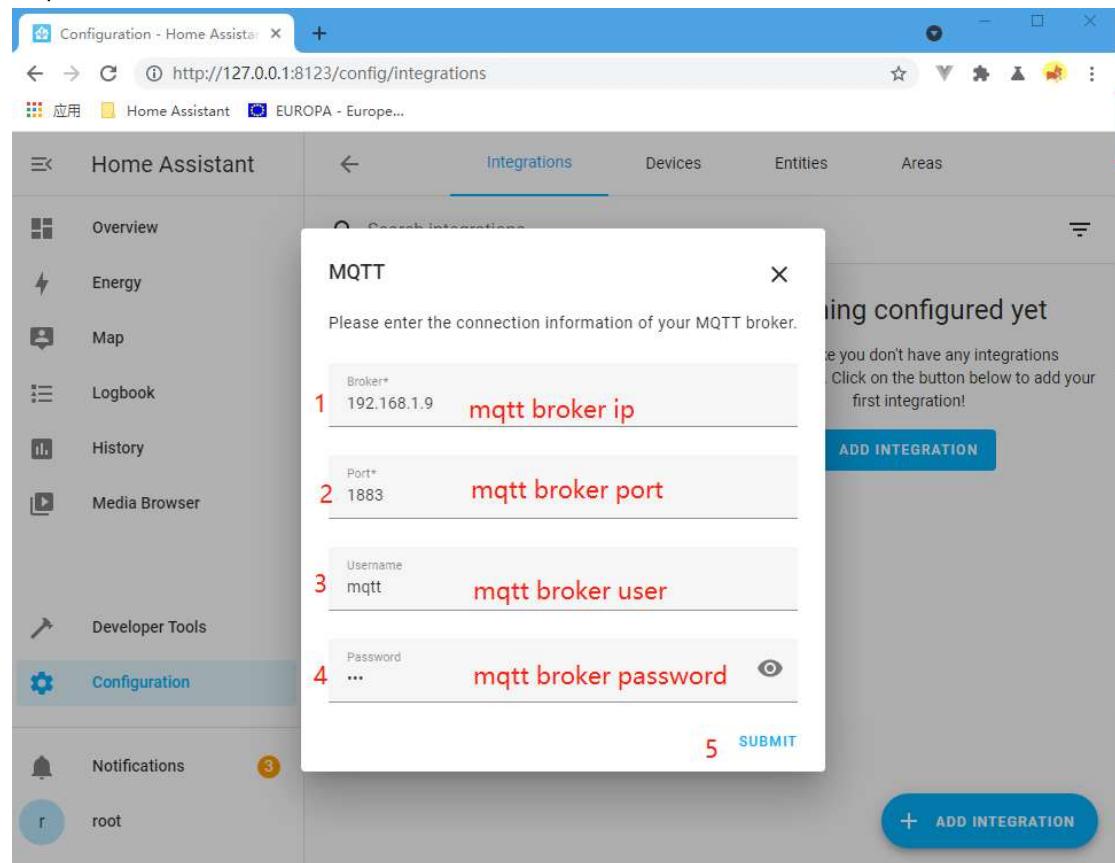
step 2

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 (labeled 1). The main content area shows a search bar and a 'Discovered' section with a single entry: '投屏电视C0' (DLNA Digital Media Renderer) with 'CONFIGURE' and 'IGNORE' buttons. To the right, it says 'Nothing configured yet' and 'ADD INTEGRATION' (labeled 3). A red box highlights the 'ADD INTEGRATION' button.

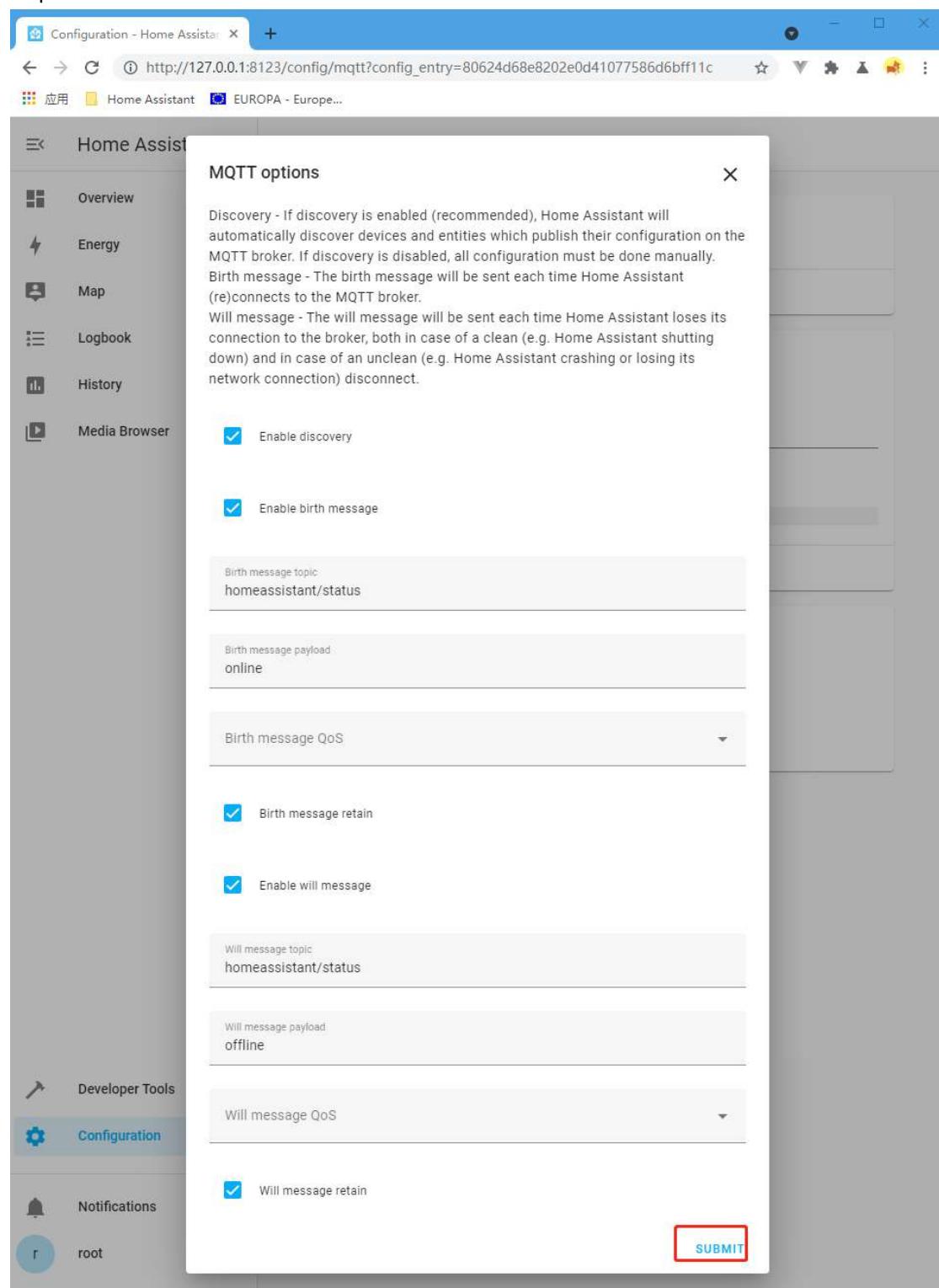
step 3



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 interface with a sidebar on the left and a main content area on the right.

Left Sidebar:

- Overview (selected)
- Energy
- Map
- Logbook
- History
- Media Browser

Bottom Left Sidebar:

- Developer Tools
- Configuration

Bottom Center:

- Notifications (2)
- root

Main Content Area (Right):

A configuration card titled "dingtian" is displayed, enclosed in a red box. The card contains the following sections:

- User:** root Unknown
- Switch:** Dingtian Ethernet Switch1, Dingtian Ethernet Switch2 (both off)
- Binary sensor:** Dingtian Ethernet Input1, Dingtian Ethernet Input2 (both off)
- Updater:** Update available