AUTOMATE EVERYTHING!

HOW TO MAKE YOUR

STUPID DEVICES

SMART

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HOME ASSISTANT
CONFERENCE 2020

Making dumb devices smart
Investigation steps

01

Search for integrations

Google for Hassio + device, Home Assistant has 1.700+ and HACS has countless integrations

02

Investigate the remote

Is it an Infrared remote? Open the remote Google the chipset.

03

Is it a network device

Use tools like Wireshark to sniff the traffic on your network and reverse engineer an integration

04

Build your own solution

Make your device dumb buttons smart with a relay

Fireplace investigation

01 Use RFXcom to catch 433Mhz signal remote signal

No results

Fireplace investigation

01 ~~Use RFX com to catch 433Mhz signal remote signal~~

02 Googled “Bellfire home automation”

Found the manufacture WiFi module, with no open API

Fireplace investigation

01 ~~Use RFX com to catch 433Mhz signal remote signal~~

02 ~~Googled “Bellfire home automation”~~

03 Open the maintenance latch of the fireplace

Located the controller “Mertik Maxitrol”

Fireplace investigation

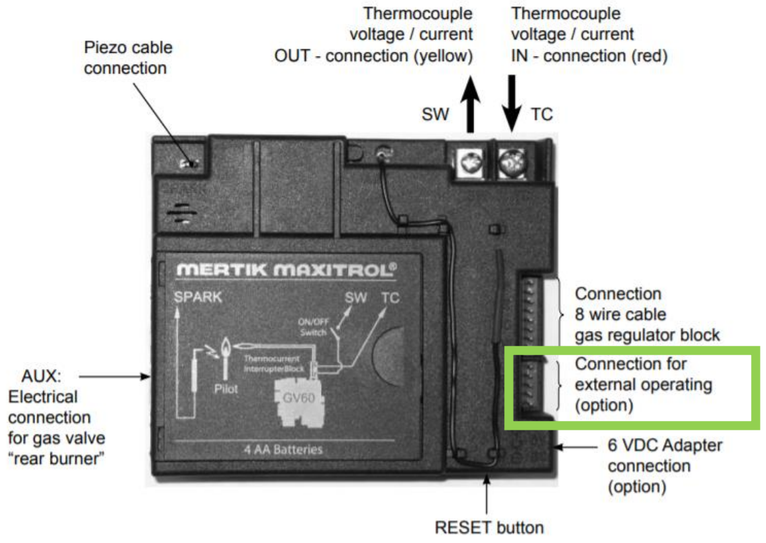
01 ~~Use RFX com to catch 433Mhz signal remote signal~~

02 ~~Googled “Bellfire home automation”~~

03 Open the maintenance latch of the fireplace

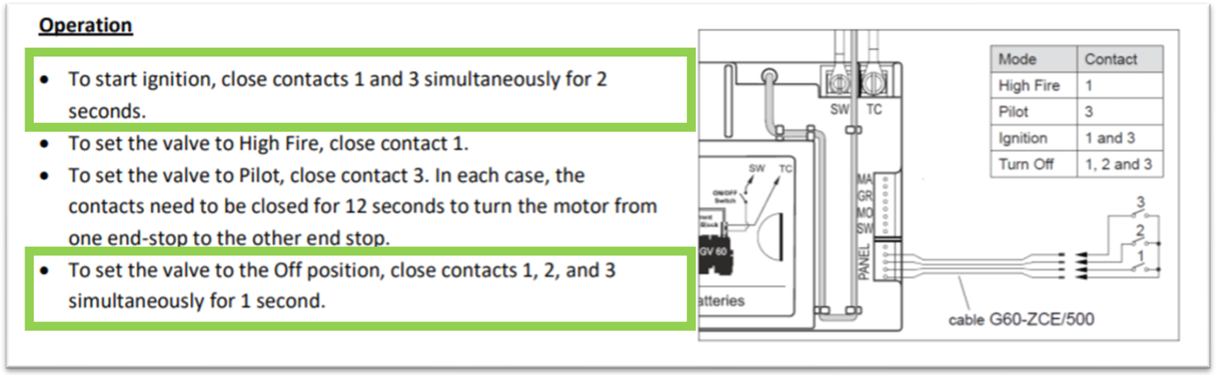
Located the controller “Mertik Maxitrol”

Found Mertik Maxitrol manual



referring to pins for external operating

Found Manual for pin usage



Operation

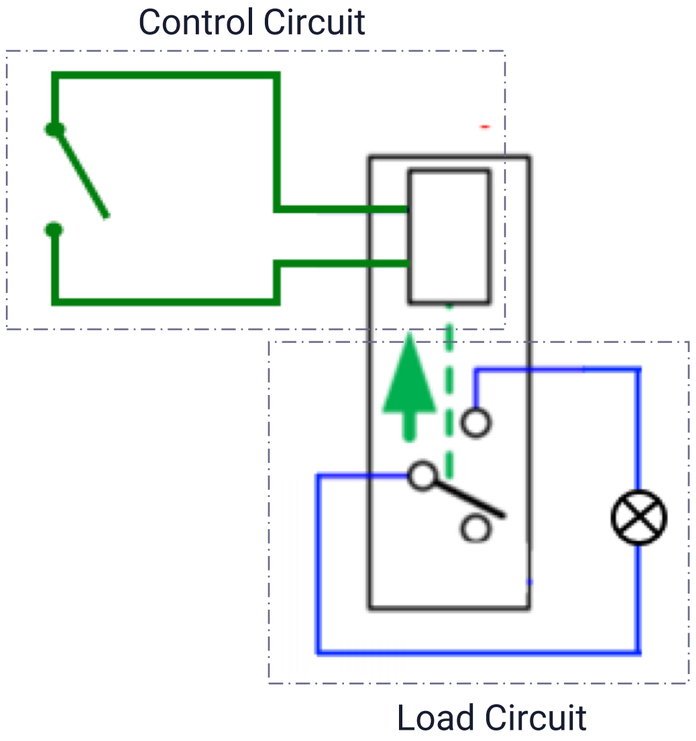
- To start ignition, close contacts 1 and 3 simultaneously for 2 seconds.
- To set the valve to High Fire, close contact 1.
- To set the valve to Pilot, close contact 3. In each case, the contacts need to be closed for 12 seconds to turn the motor from one end-stop to the other end stop.
- To set the valve to the Off position, close contacts 1, 2, and 3 simultaneously for 1 second.

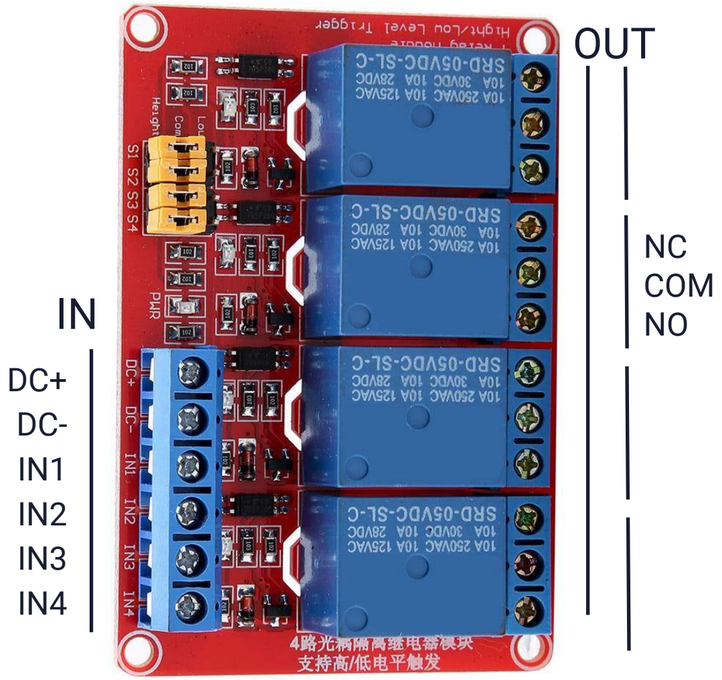
Mode	Contact
High Fire	1
Pilot	3
Ignition	1 and 3
Turn Off	1, 2 and 3

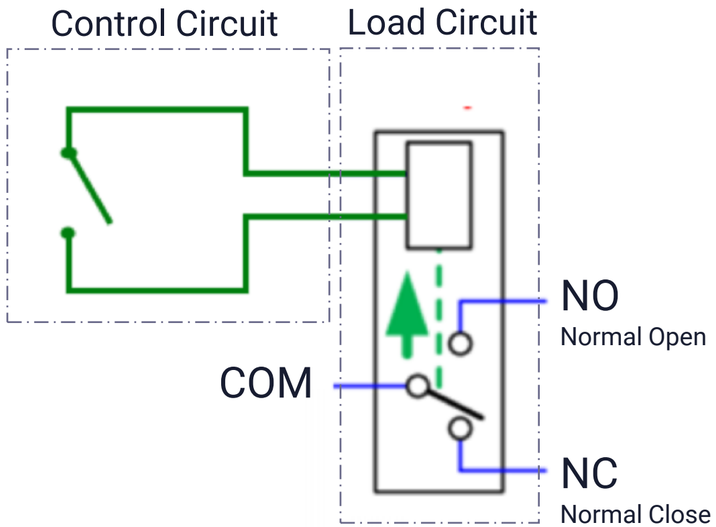
explaining timing and control


EUREKA

Relay
intro

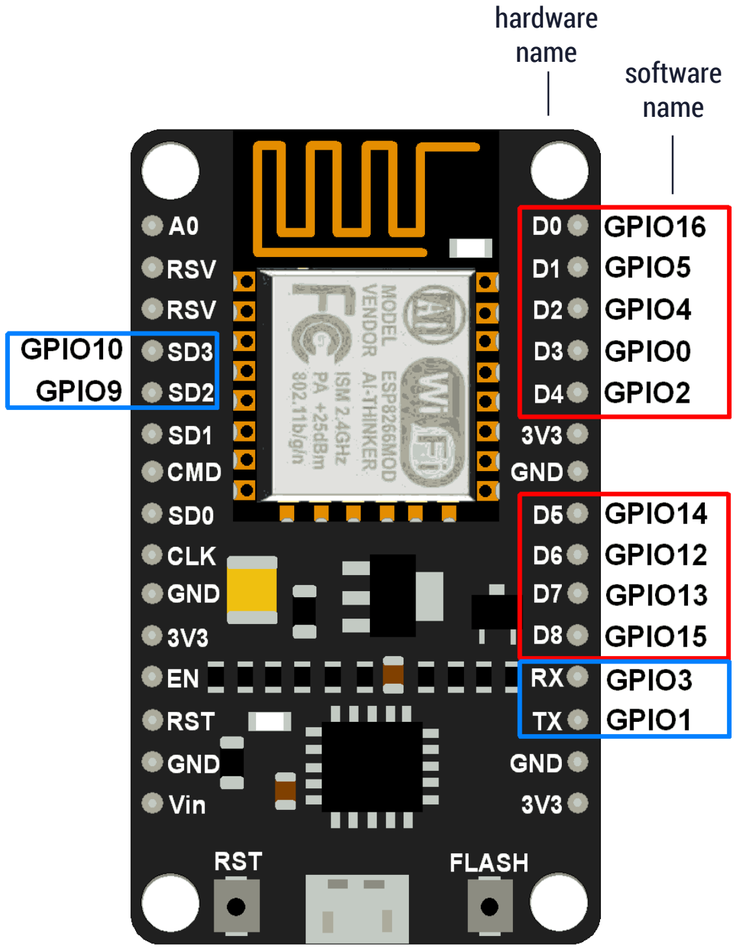

Control Circuit
Load Circuit


IN
DC+
DC-
IN1
IN2
IN3
IN4
OUT
NC
COM
NO
SRD-05VDC-SL-C
4路光耦隔离继电器模块
支持高/低电平触发


Control Circuit
Load Circuit
NO
Normal Open
COM
NC
Normal Close

ESP
intro

Low-cost Wi-Fi chips with flash memory built-in allowing you to build a single chip devices.



ESP8266 - NODEMCU

There are countless variants on the board. Board vary on memory size , pin count and connectivity.

Tips for getting started:

- Get a development board
- If you need BLE pick a ESP32

ESPHome
intro

ESPHome is a system to control your ESP8266/ESP32 by simple yet powerful configuration files and control them remotely through Home Automation systems.

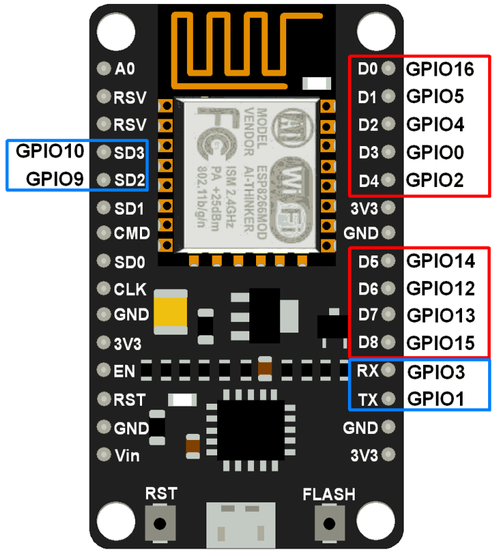
Key features:

- Easy to work with, no programming needed
- Seamless integration with Home Assistant
- Over-The-Air flashing of the firmware
- Supports a long list of devices.

Making it work

01 Install ESPHome in Home Assistant and create ESPHome node

02 Flash ESP chip with vanilla ESPHome firmware



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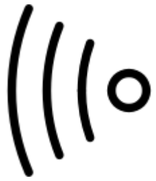
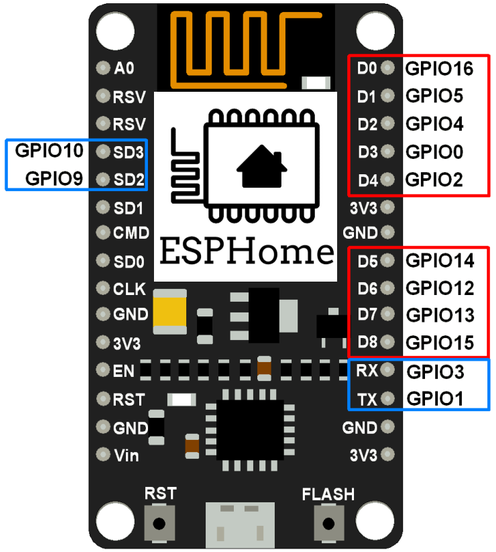
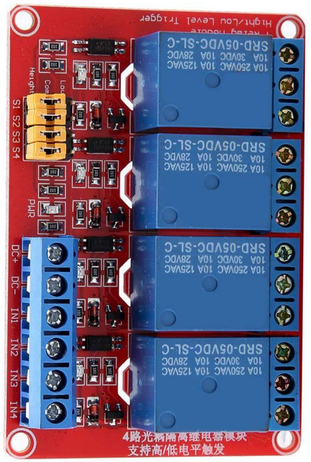


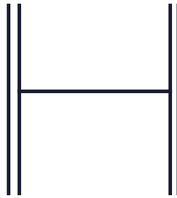
02 Flash ESP chip with vanilla ESPHome firmware



03 Wire the relay to the ESP



05 Wire relays to fireplace



04 Configure ESPHome to control the relays

06 Light fireplace!

LET'S GO

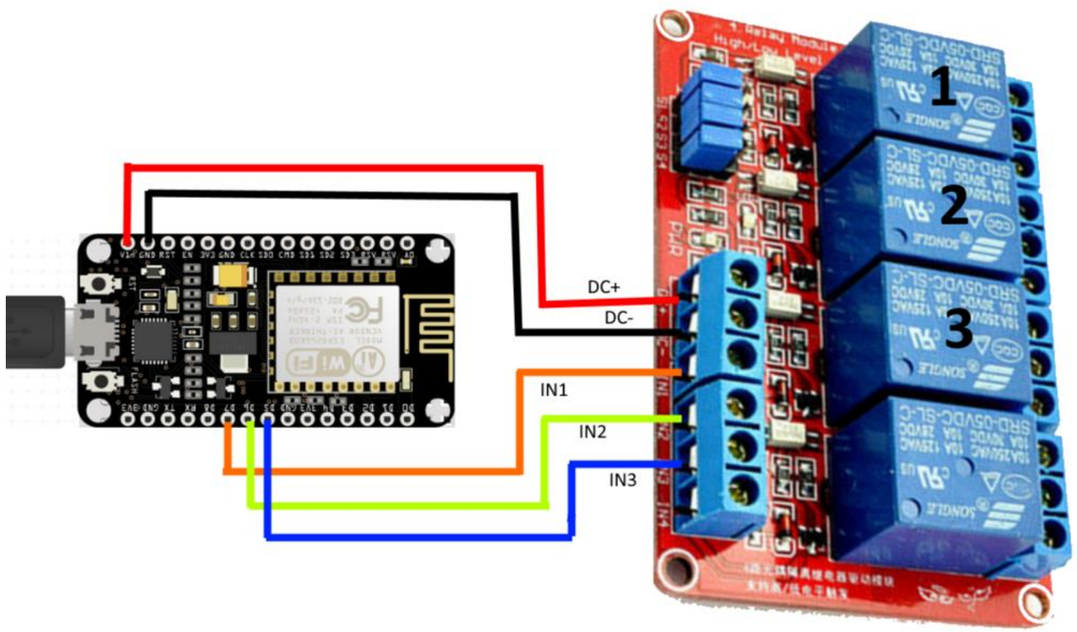
Install ESPHome

- ❑ Install Supervise add-on [1]
- ❑ Create your first configuration
- ❑ Compile vanilla firmware
- ❑ Upload firmware to ESP
  Docker users tip: use the ESPHome flasher tool [2]
- ❑ Verify integration in Home Assistant

References:
1. https://esphome.io
   Guide: “Getting Started with Home Assistant Add-on”
2. https://github.com/esphome/esphome-flasher/releases
   ESPHome flasher tool

THE WIRING

wiring in



Wire	ESP	Relay
Red	VIN	DC+
Black	GRN	DC-
Orange	D7	IN1
Yellow	D6	IN2
Blue	D5	IN3

Configuration time

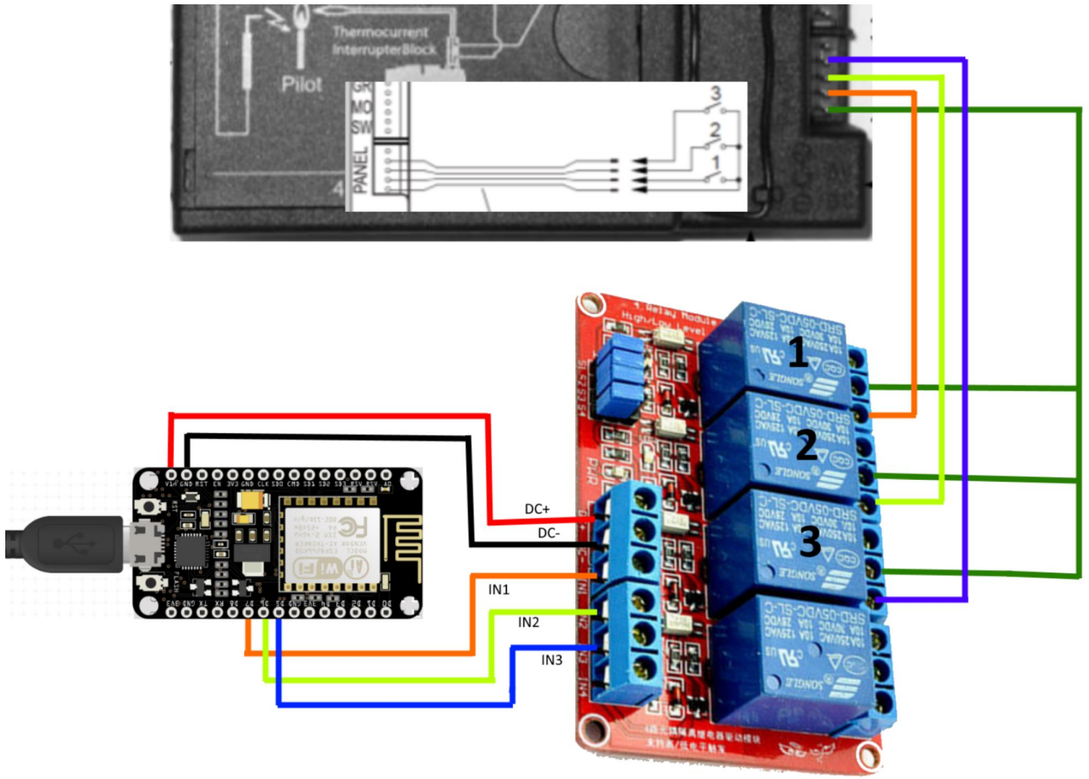
Configure the ESP:

- ❑ Expose the individual relays as switches
- ❑ Verify in Home Assistant
- ❑ Add timing to control the fireplace
  - Ignition: Close relay 1 and 3 for two seconds
  - Turn Off: Close contacts 1,2 and 3 for 1 second
- ❑ Verify in Home Assistant

References:

1. https://esphome.io
   Guide: “Getting Started with Home Assistant Add-on”
2. https://github.com/esphome/esphome-flasher/releases
   ESPHome flasher tool

Wiring out



Wire	Relay	Fireplace Pin
Orange	1 (NO)	1
Yellow	2 (NO)	2
Blue	3 (NO)	3
Green	1,2,3 (COM)	0