Open AIR Mini Manual

Manual version 1.2.23

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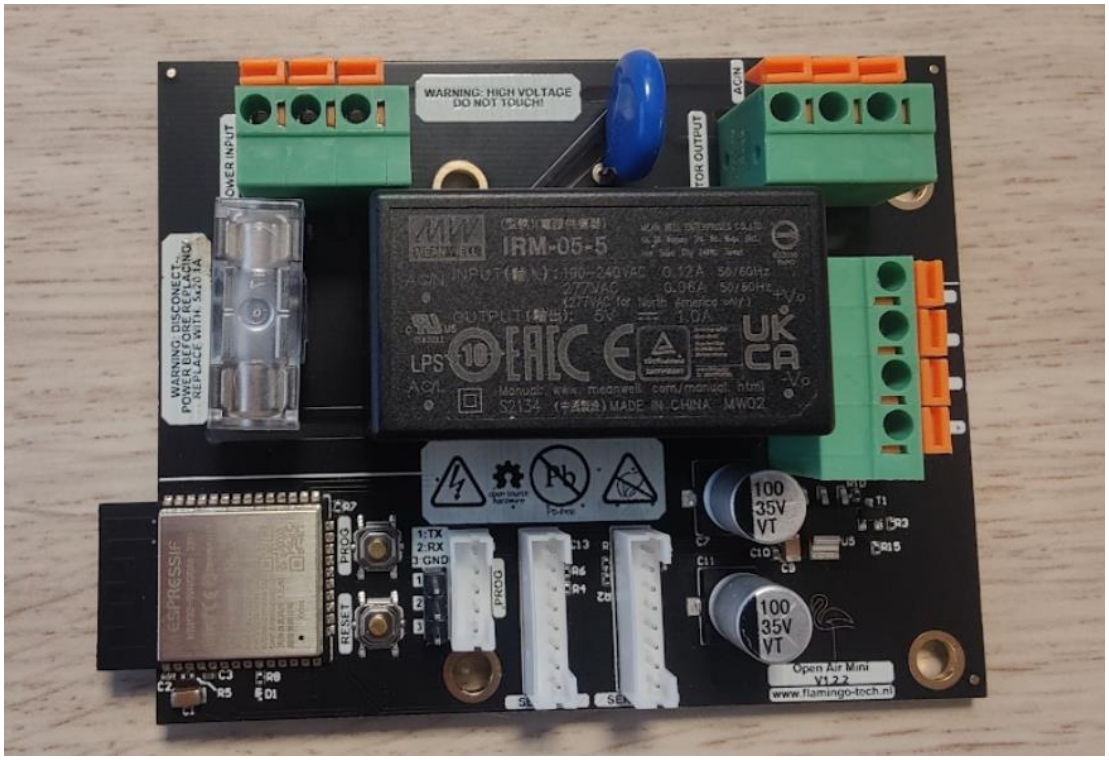

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Introduction

The Open Air Mini is an electronic circuit that replaces your existing circuit in your ventilation box. An open source initiative to be able to control your favorite mechanical ventilation unit with your home automation system.

Typically a DUCO/ORCON ventilation box will have its circuit board replaced by this ‘Open Air Mini’. As a consequence you can now use a home automation system, or a web browser, to control your ventilation. Most people use ‘Home Assistant’, but the design of the hardware, the ESP32 chip, allows easy adaptation to any system connected to WiFi.

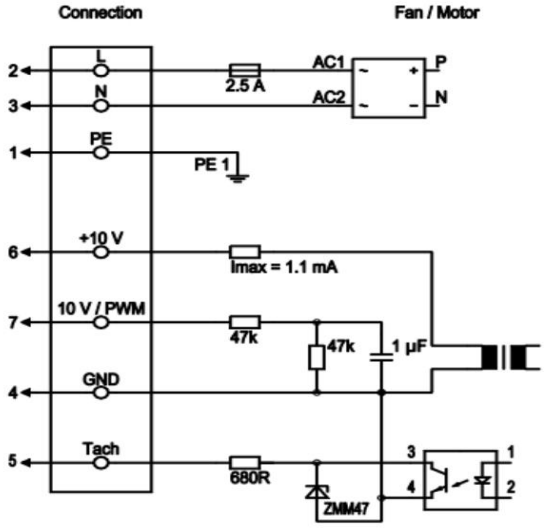
Typical use case is to configure demand driven ventilation, meaning, measure the air quality (co2, moisture, TVOC) and based on the measurement, control the ventilation in your home. Saving energy by stopping the motor of your ventilation system when possible, and saving energy by not unnecessarily removing costly warm air from your house. All while not being ‘vendor locked’, not depending on the cloud, not exposing statistics to anybody.

Important Notice

This project is not supported by Duco, Orcon or any other vendor, nor is there any affiliation with and/or (technical) support from these companies. When you modify your ventilation box, you are doing so of your own volition and ***at your own risk.***

Tested to Work With

- DucoBox Silent Standard
- DucoBox Silent Perilex
- DucoBox Silent Connect
- DucoBox Focus (Warning: Original Duco Valves are not supported!)
- Orcon MVS-15RH
- and more (see schematic below)



The following pins need to be available:

230 Vac directly to the motor

1 Protective earth
2 Power Supply 230VAC 50-60Hz
3 Neutral conductor
Control cabeling:

4 GND (on ebmpapst motors BLUE)
5 Tach output (on ebmpapst motors WHITE)
6 10V Output (on ebmpapst motors RED)
7 0-10V PWM Input (on ebmpapst motors YELLOW)

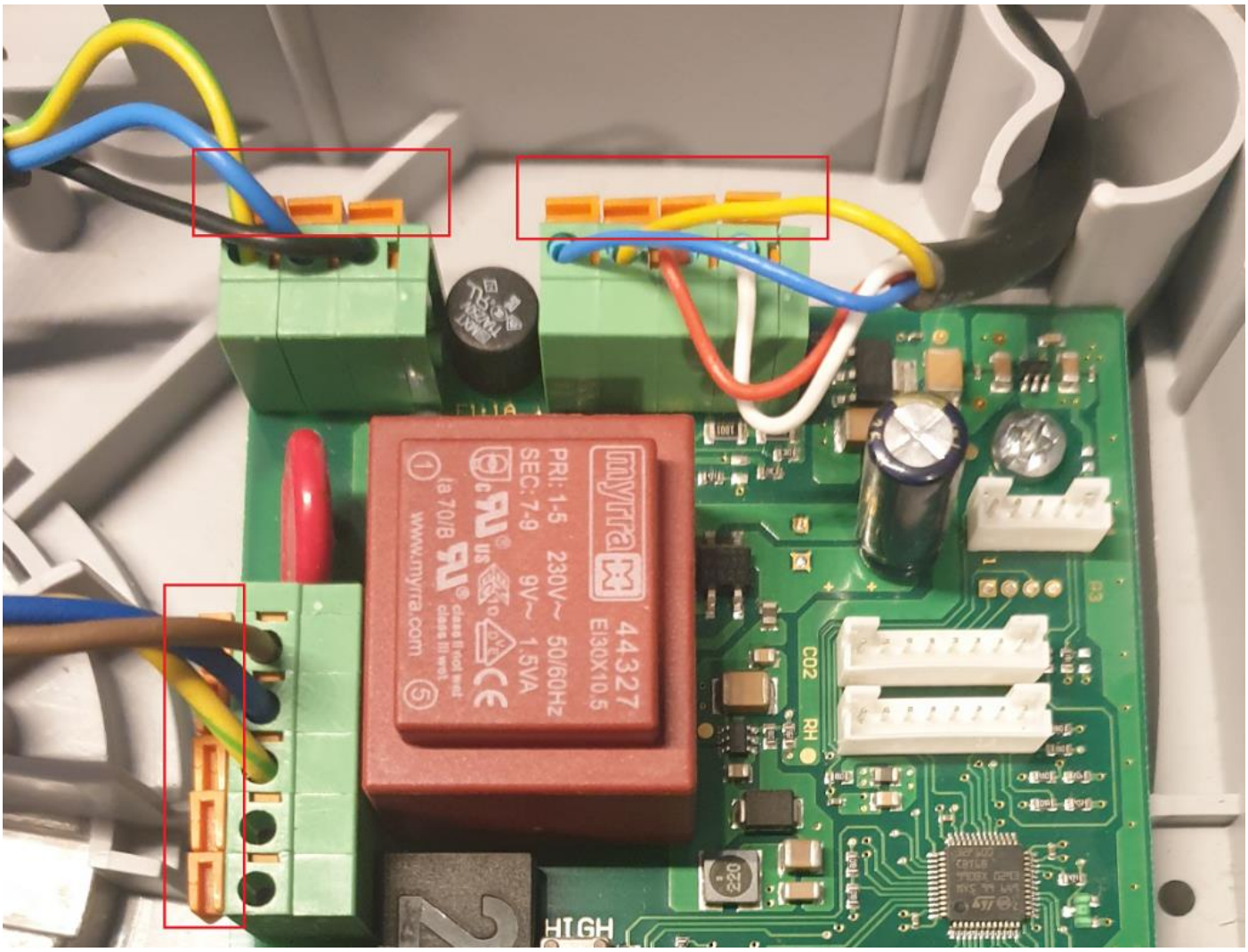
More information;

https://gathering.tweakers.net/forum/list_messages/2099830
https://github.com/Flamingo-tech/Open-AIR/tree/main/Open%20Air%20Mini

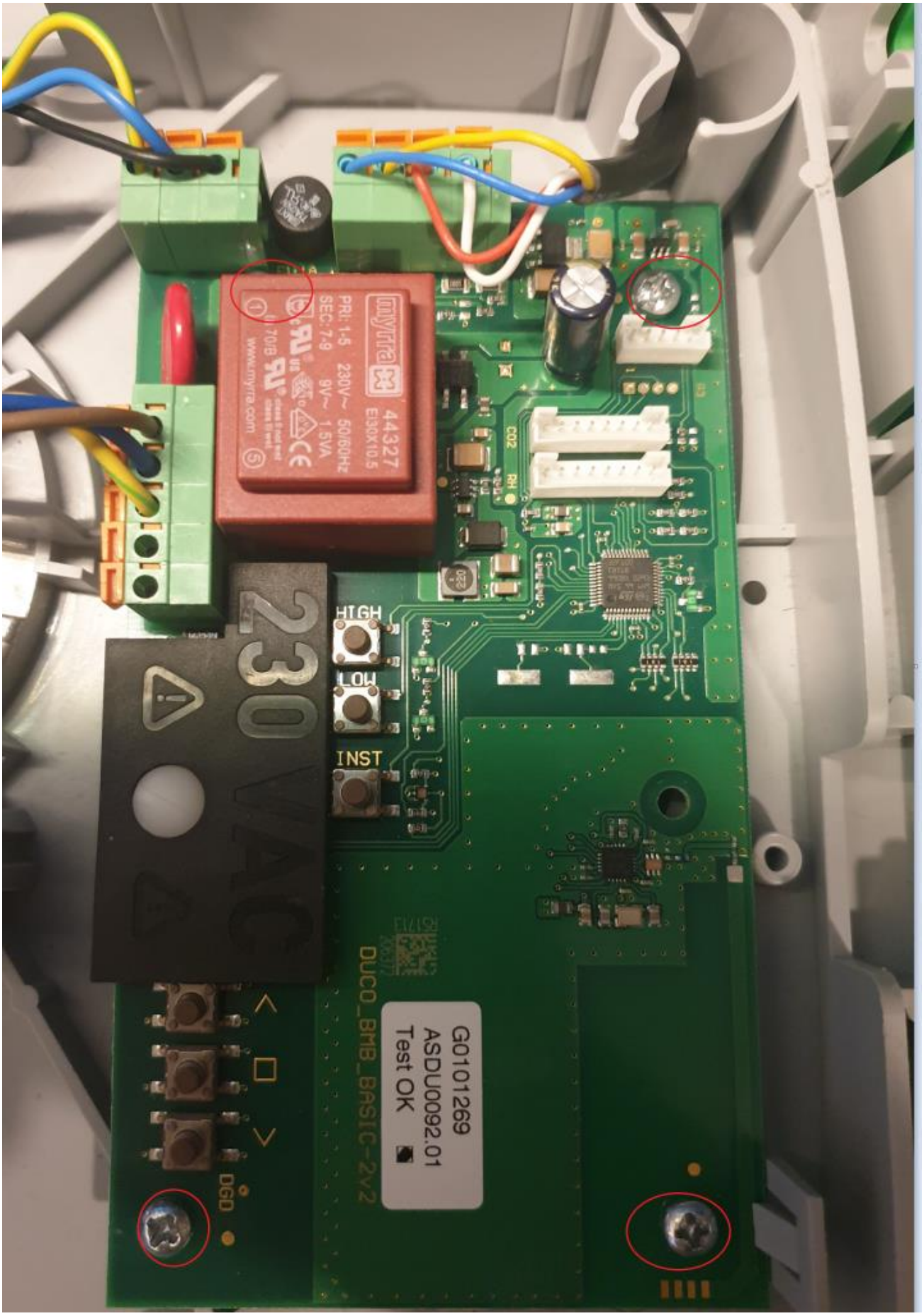
Physical/hardware installation

Step 1: Remove all the Cables

Very important :Unplug the power cable!
Failing to do this may cause serious harm or death!!
If you don’t know what you are doing or don’t understand the steps below. Please ask someone for assistance. Or call in a professional.
Verify that you disconnected the power cable! **(check, double check)**
Now press the orange flags with a flathead screw driver and pull out the wires.

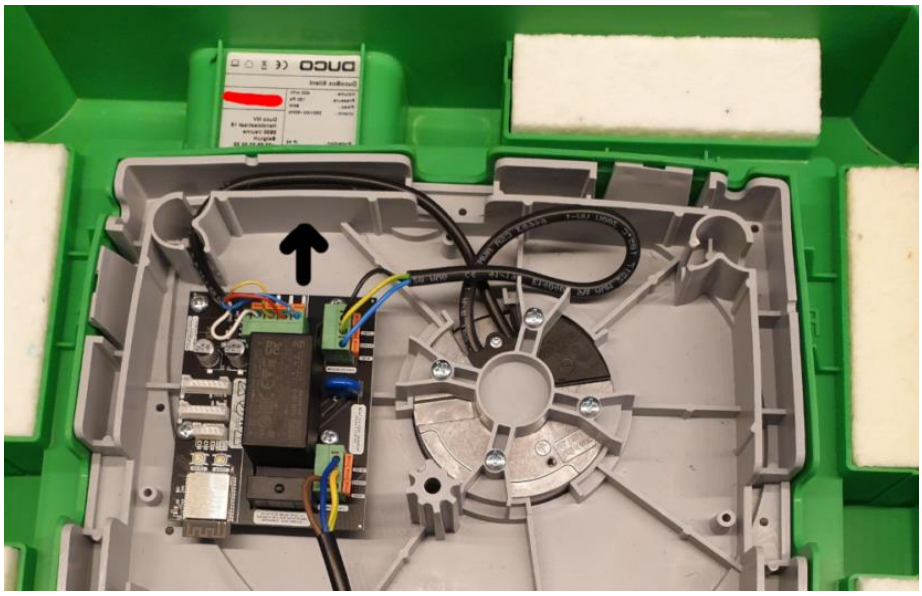


Step 2: Remove the four screws



Now remove the old Duco mainboard.
You can sell these at a second hand site or keep them as space if you need to rebuild your ventilation box in original state.

Step 3: Insert Open Duco Mini

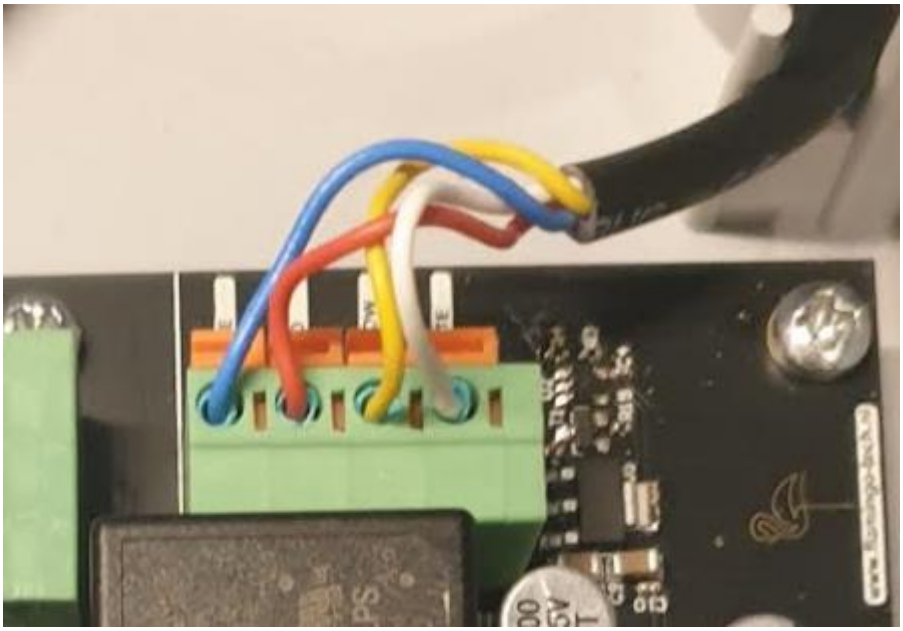


Screw the Four screws back in. The black arrow is pointing at your air outlet.

Step 4: Insert wiring

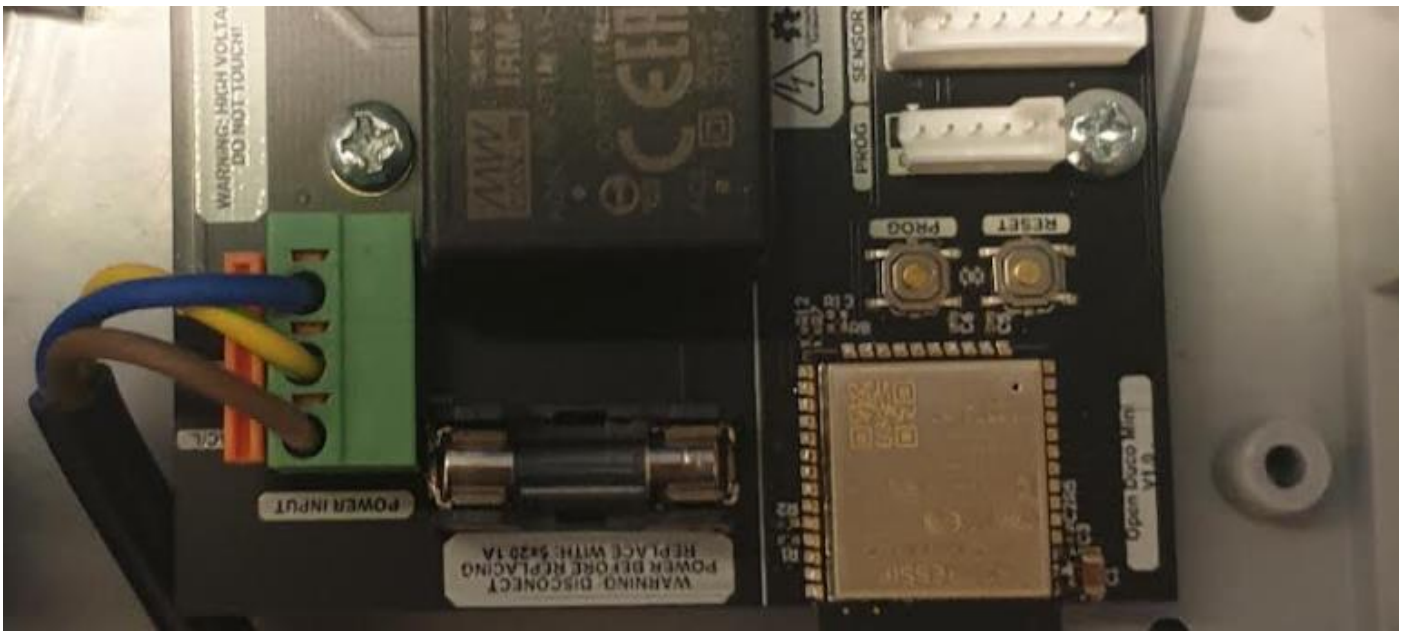
Very important: First push the orange flag and insert the cable at the same time. It is very important that you make a good connection!

This is done by inserting the cable as deep as you can. After you've inserted the cable: stop pushing the orange flag. Give the cable a bit of a thug to make sure it is in there tight.



Connect motor signal cable
Pin 1: Blue
Pin 2: Red
Pin 3 : Yellow
Pin 4: White.

Power Wiring



Power input wiring
Connect the Input plug to the bottom connector: Power Input
Pin 1: Brown (AC/L)
pin 2: Green/Yellow (Earth)
Pin : Blue (AC/N)

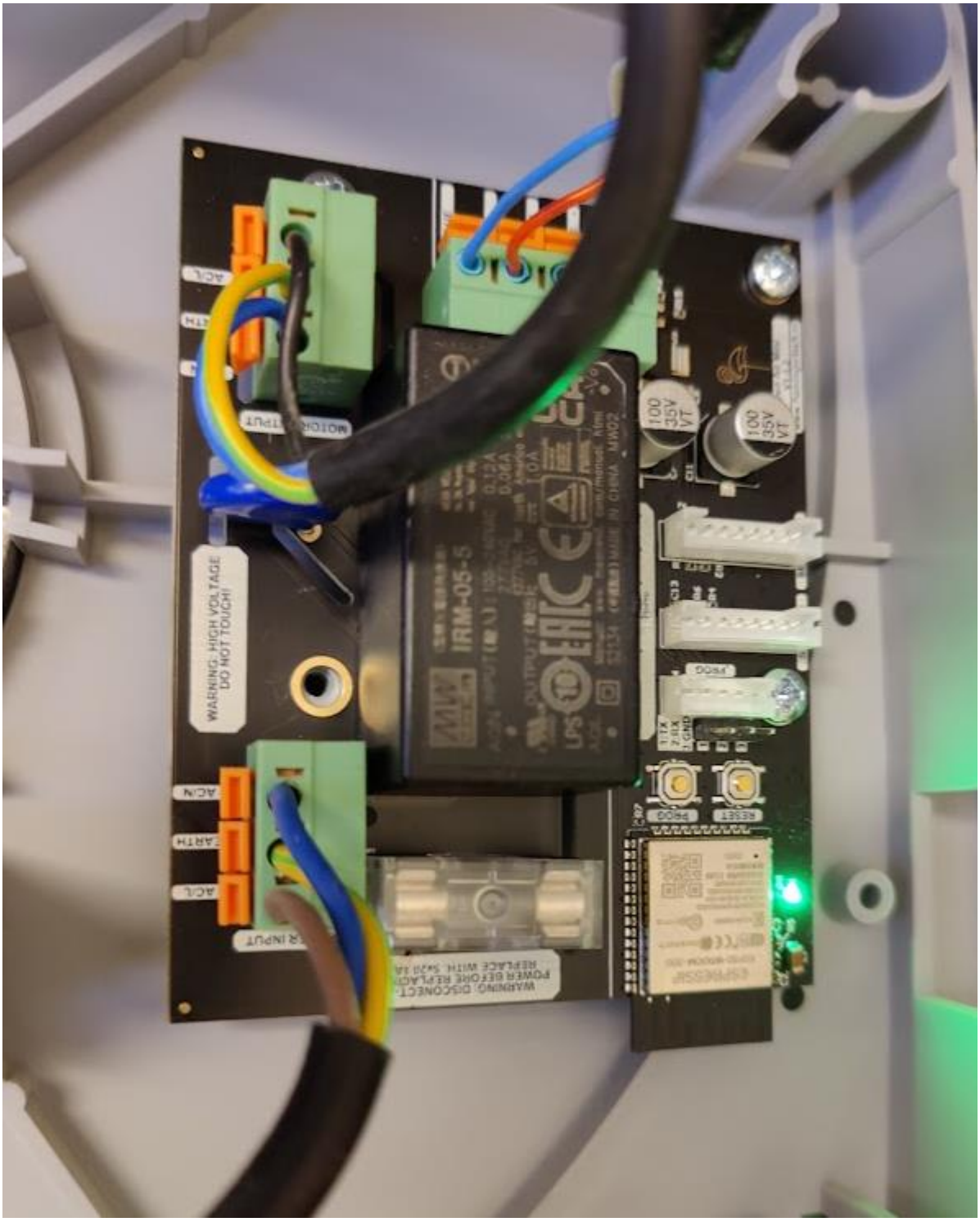
Motor Power Wiring

Motor Power Cable Pinout
Connect the motor power cable: Motor Output
Pin 1: Blue(AC/N)
pin 2: Green/Yellow (Earth)
Pin 3: Black(AC/L)

Motor Data Wiring

Step 5: Connect the power supply

Connect the power plug again.;



The green led should blink. If this is the case you were successful !

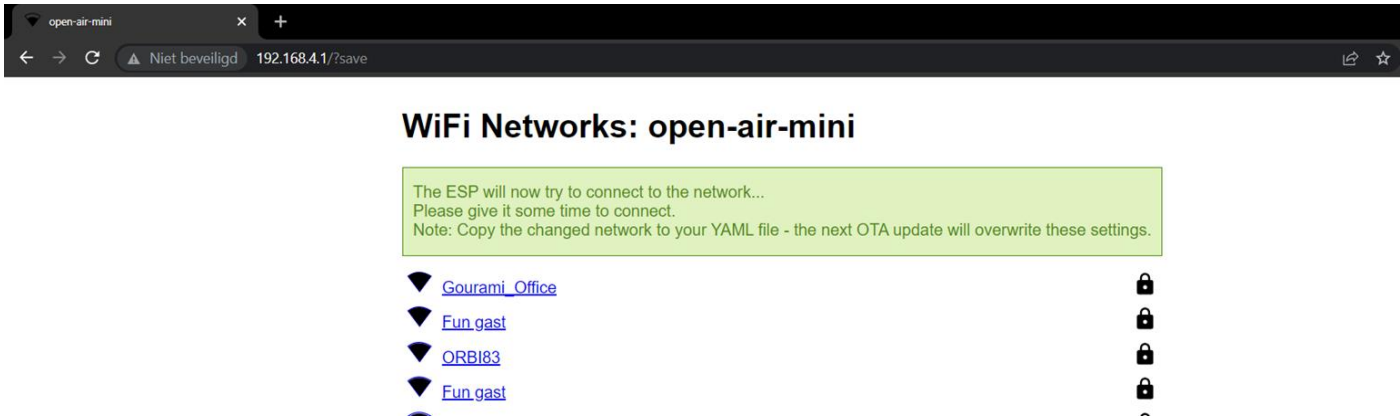
Software configuration and installation

The section of the manual describes how to add this device to your WiFi network and to your favorite home automation system.

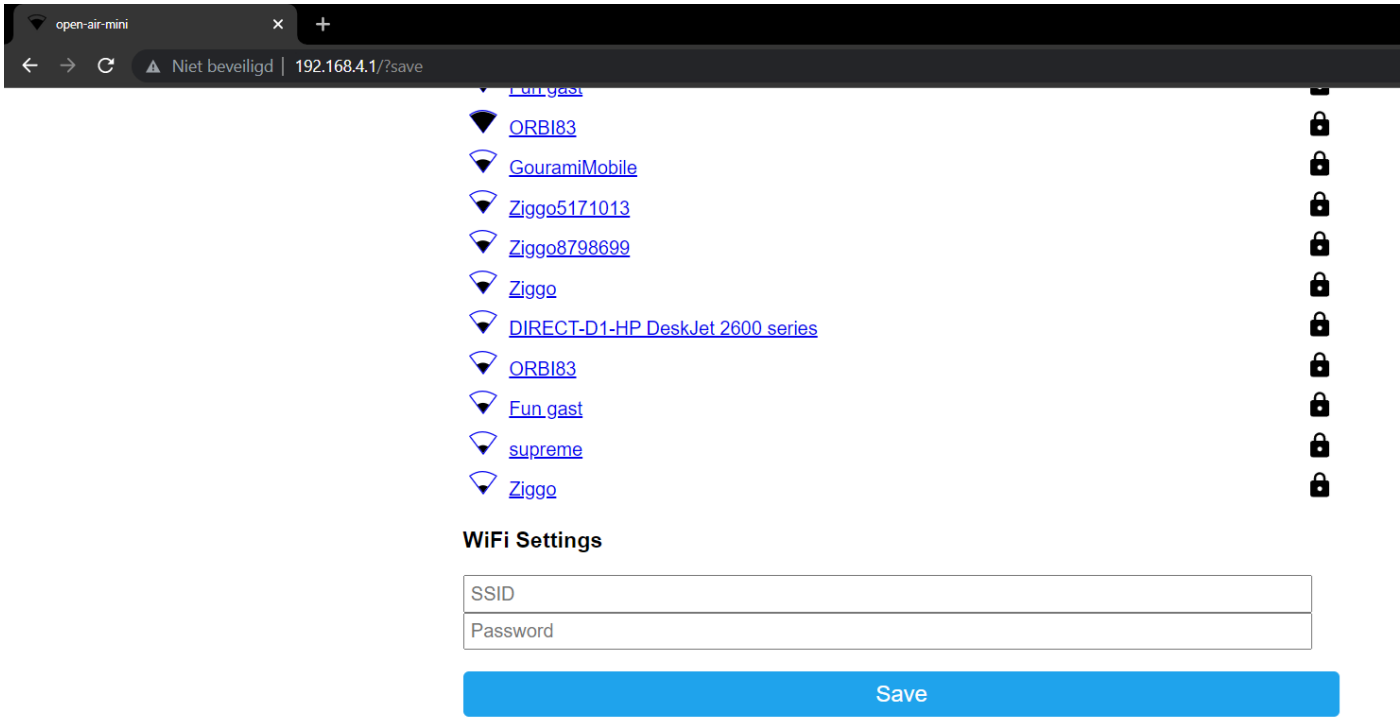
Connecting to WI-FI

Make sure you have the pre-flashed / pre-programed version!, you need to configure it with your WiFi network. It’s handy to have a laptop for that purpose.

1. If the open AIR Mini cannot connect to a network for longer than three minutes it will create an hotspot. This will happen with the pre-programmed version.
2. Wait three minutes.
3. Start your laptop and search for the wifi network called; ‘OpenAir backup’.
4. Connect to it and use the password: “ChangeMe@123”
5. You should be connected to the WiFi network of the OpenAir mini and have an IP address of 192.168.4.100, with a default gateway of ‘192.168.4.1’. The default gateway is the Open Air Mini.
6. So, start a browser and go to ‘192.168.4.1’.
7. You should get a webpage that displays all the available WiFi networks.



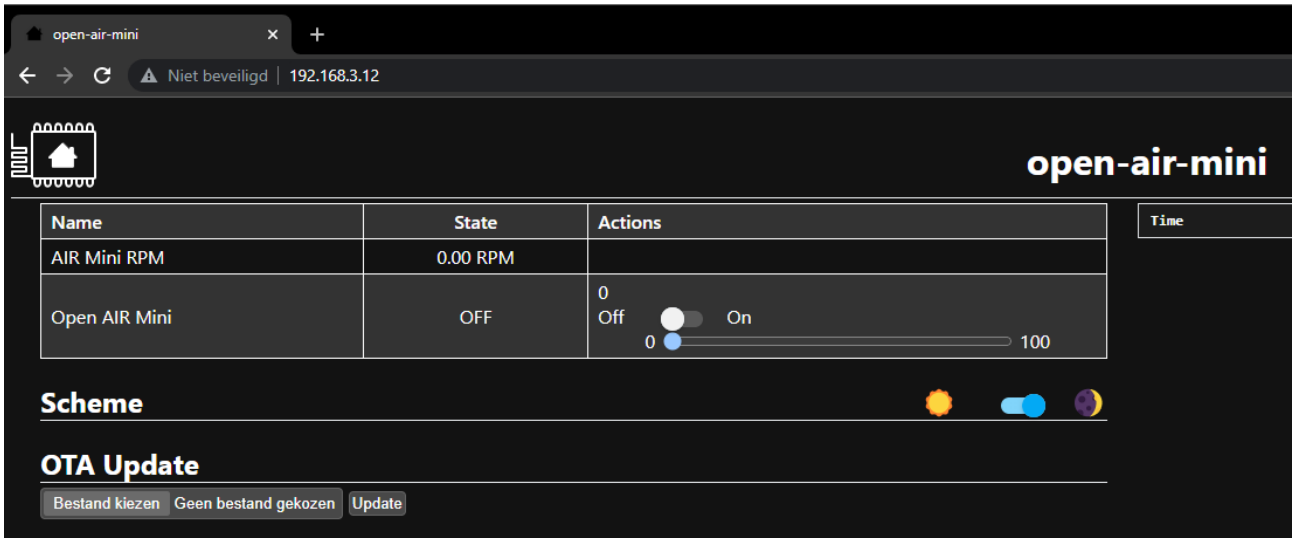
8. Select the WiFi network you want to connect to, and enter the password. Please be very careful to enter the correct information. If you make an error in the password, you will need to reset thedevice.Press the ‘save’ button.



9 Now login to your router to find the new IP address of your Open Air Mini;

This is an Asus router, please follow the documentation of your router to get a list of the WiFi clients.

10 Open an browser and go to that IP address;



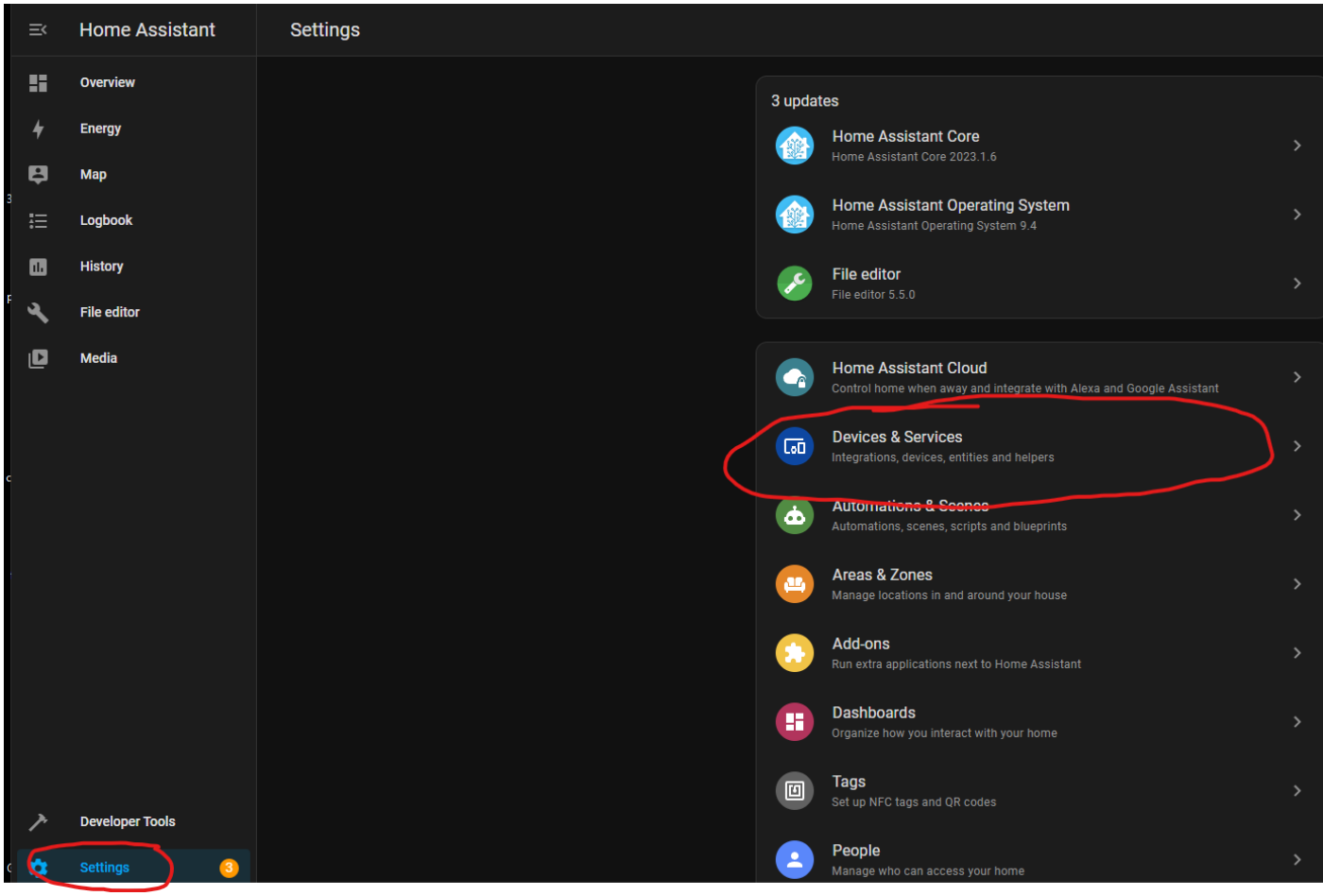
11 As an additional step, you could make a DHCP reservation for it. It’s recommended, because it needs to have a fixed IP address. Follow the instructions for your WiFi router on how to reserve a fixed IP address for your Open Air Mini. Write down this information.

Adding to home assistant

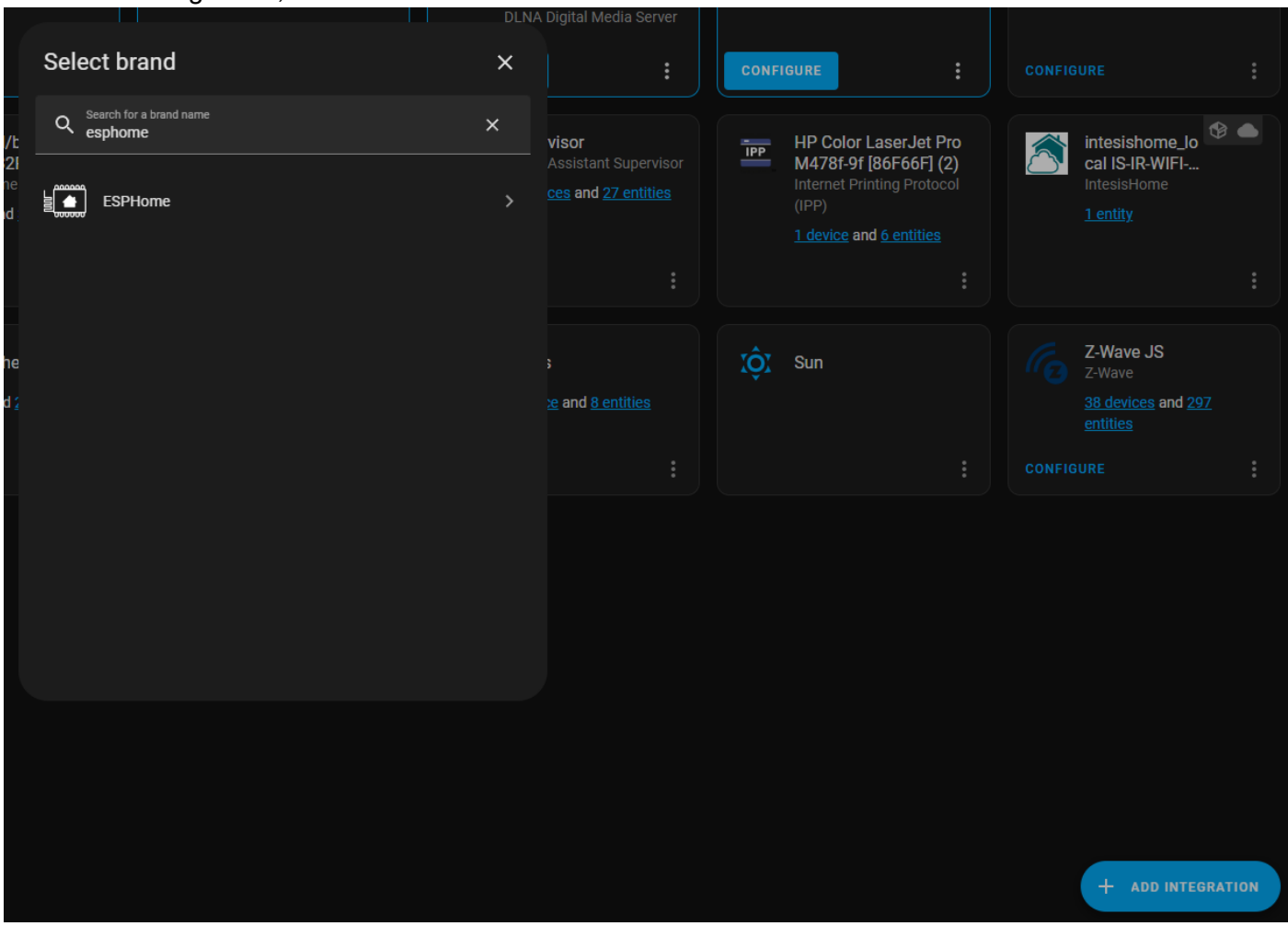
This manual was made for Home Assistant version 2023.1.6. It could be that in future versions the procedure is different. Make sure you have set a fixed IP address, see previous chapter of this manual.

Follow the following steps;

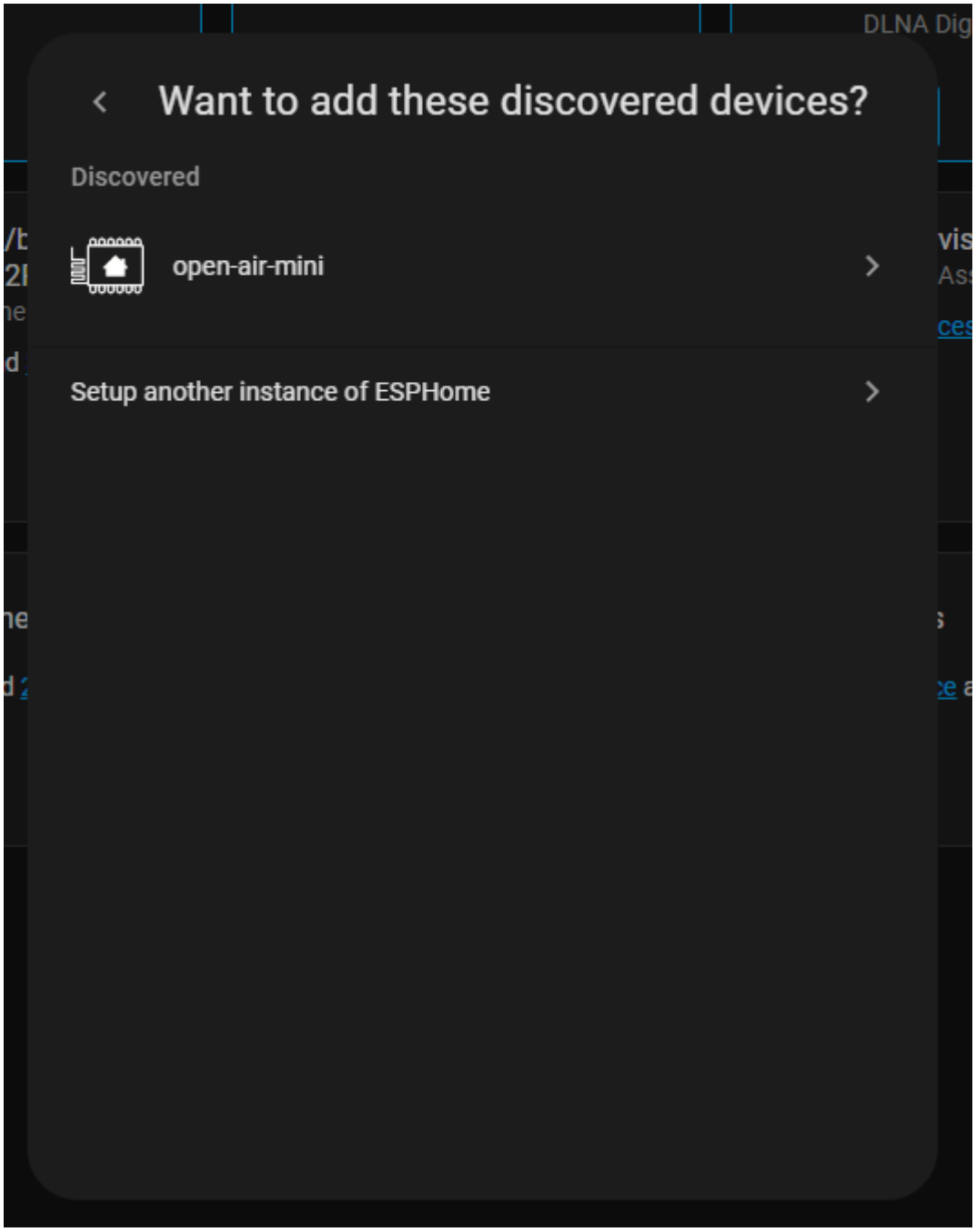
1 Login in home assistant
2 Go to Settings,Select Devices & Services



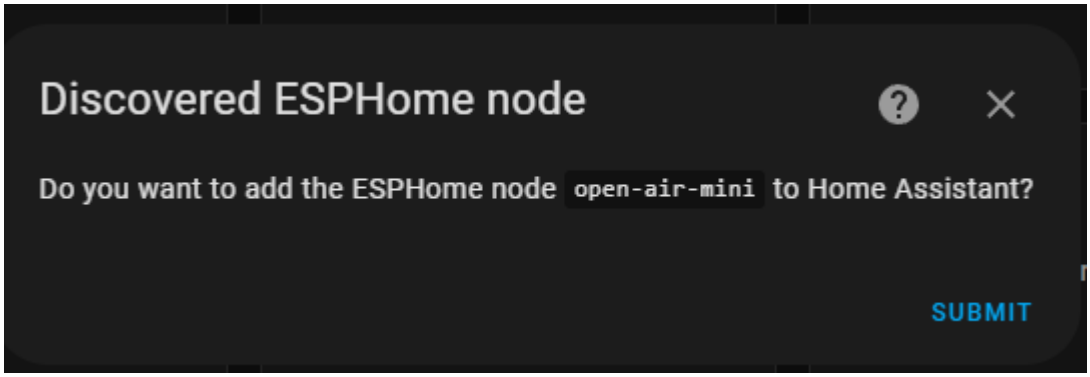
3 Select ‘add integration’, and search for ESPHome



4 If everything is in place, you should see a discovered device;



5 Select Submit;



6 Sometimes you need to select its IP address manually.

7 You can now see your device in Home Assistant;