ZB-Stick with Home Assistant

This document describes how to use POPP ZB- Shield with existing Home Automation platform called Home Assistant (Hass.io) (https://www.home-assistant.io/).

POP ZB-Shield firmware version, referenced in this guide: **6.3.0**

Home Assistant (Hass.io) software version, referenced in this guide: **0.112.4**

This guide focuses on:

- Connect POPP ZB-Shield to your Raspberry Pi
- Setup Zigbee Home Automation component in Home Assistant
- Troubleshooting
- Zigbee devices Pairing and Removal
- Zigbee devices examples

This guide DOES NOT focus on Home Assistant (Hass.io) installation and initial configuration. Please follow the official instructions https://www.home-assistant.io/hassio/installation/.

Table of Contents

Introduction 3

Initial setup and connection 4

- Connect POPP ZB-Shield to your Raspberry Pi 4
- Disable Serial Console 5
- Enable UART Bluetooth overlay (RPi 3 and Rpi 4) 5
- Check configuration in the Web Interface 6

Zigbee HA Component configuration 8

- Configure ZHA component 8
- Setup Logging (optional) 10

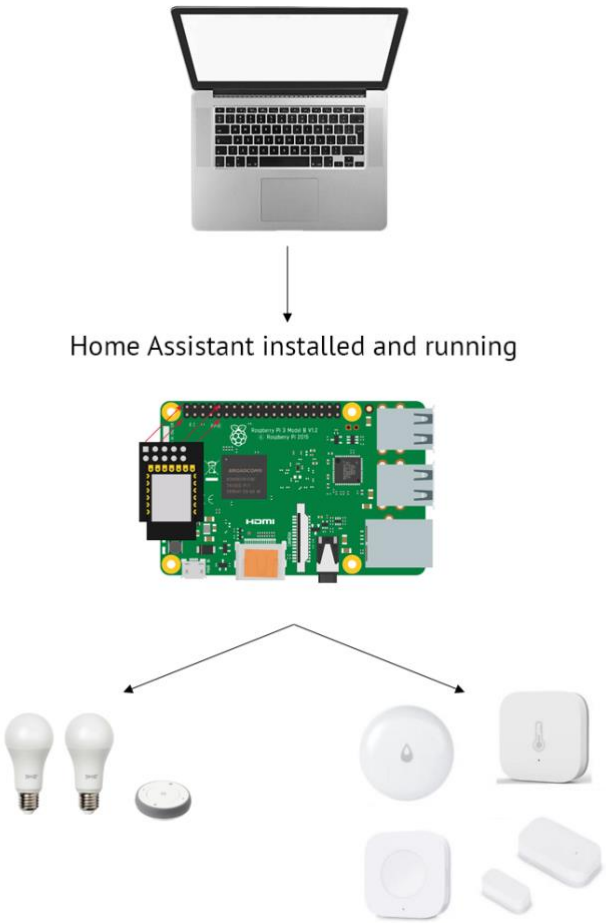
Zigbee HA Component Usage 12

- Add your devices to the Home Assistant 12
- Remove your device from Home Assistant 14
- Example: Philips Hue Bulb 15

Troubleshooting 16

Introduction

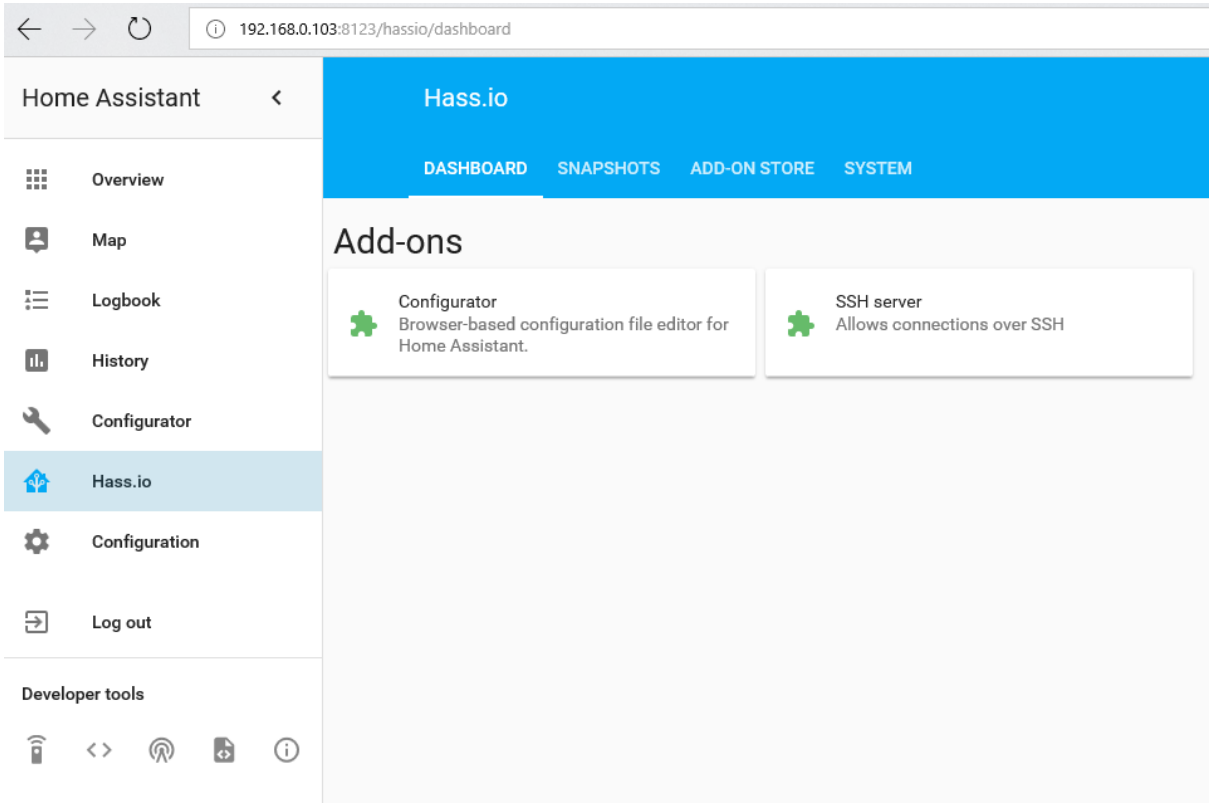
POPP ZB-Shield can be used with a Raspberry Pi with Home Assistant installed



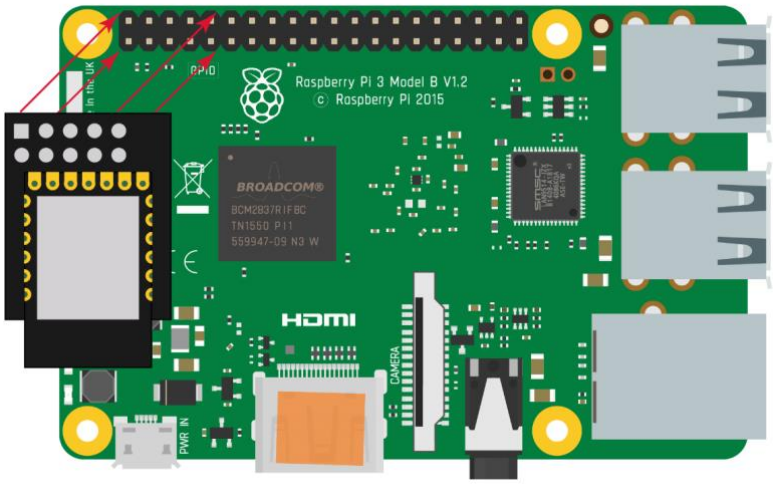
Initial setup and connection

This guide does not cover Home Assistant (Hass.io) installation. We assume, that you can access Home Assistant Web Interface using your browser.

It is highly recommended to have SSH Server and Configurator addons installed, at least during the Zigbee setup phase. To install them just follow the Hass.io installation guide (https://www.home-assistant.io/hassio/installation/).



Connect POPP ZB-Shield to your Raspberry Pi

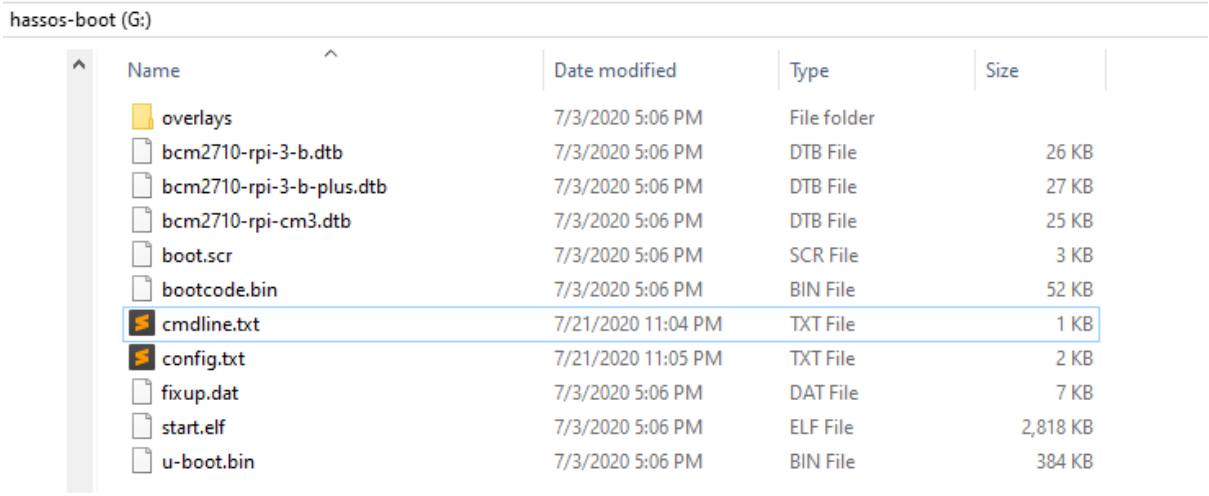


Disable Serial Console

By default, the Raspberry Pi (1,2,3,4) has the Serial Console enabled on the UART, which is used by the POPP ZB-Shield. This results in conflict, so we need to disable the Serial Console.

To do it:

- Insert the SD card with installed Hass.io into your PC/laptop.
- Find the **cmdline.txt** file in the SD card file system

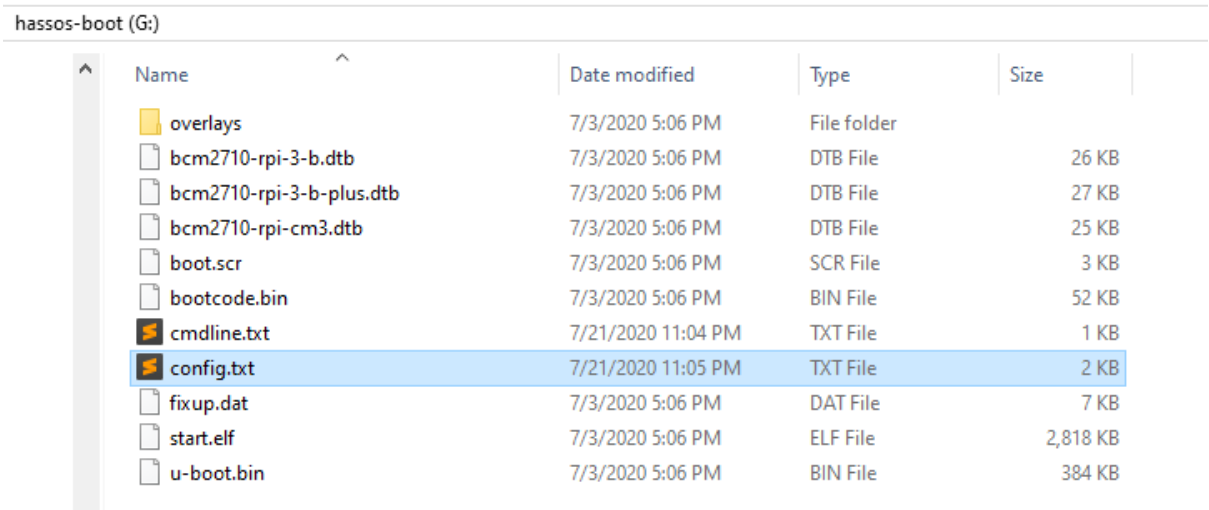


- Modify this file and remove `console=tty1`:

Enable UART Bluetooth overlay (RPi 3 and Rpi 4)

If you are using Raspberry Pi 3 you need to perform an additional step of enabling the Bluetooth UART overlay configuration. To do it:

- Insert the SD card with installed Hass.io into your PC/laptop.
- Find the **config.txt** file in the SD card file system



- Modify this file and add an extra line at the end:
  `enable_uart=1`

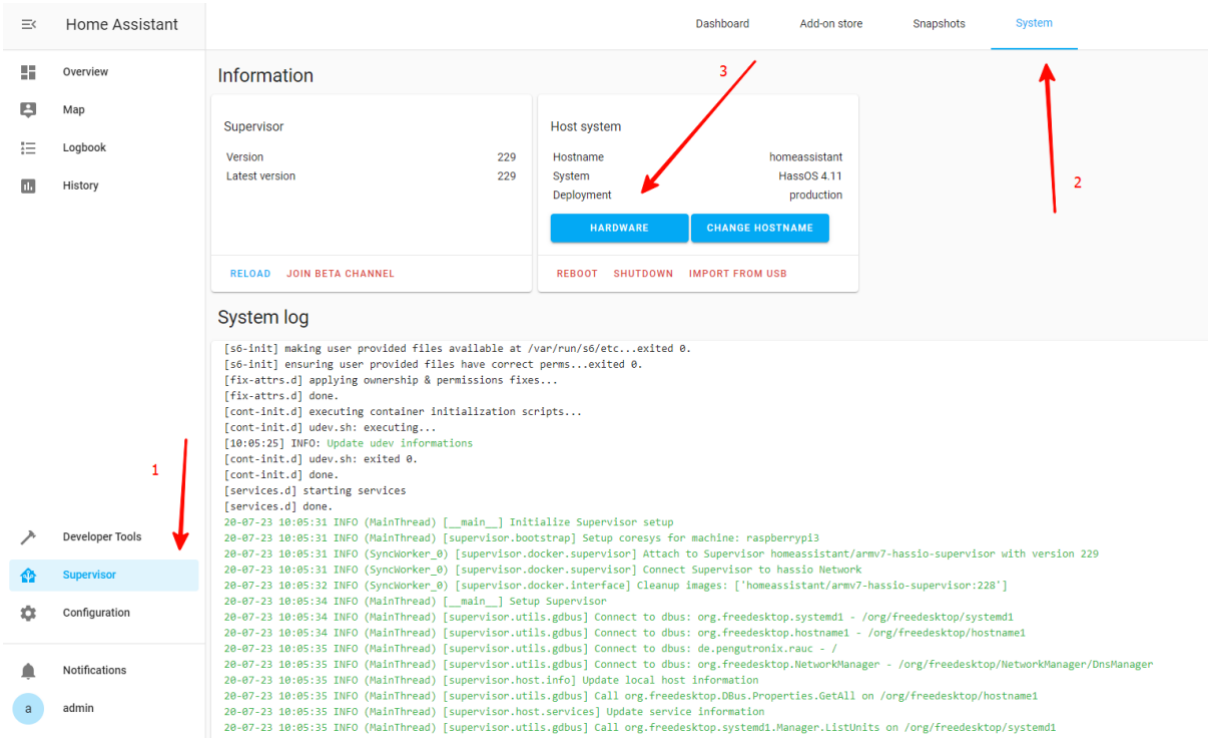
  `dtoverlay=pi3-miniuart-bt`

```
config.txt
#dtparam=spi=on

# Uncomment this to enable the lirc-rpi module
#dtoverlay=lirc-rpi

# Additional overlays and parameters are documented /boot/overlays/README

# Enable audio (loads snd_bcm2835)
dtparam=audio=on

[all]
#dtoverlay=vc4-fkms-v3d
#max_framebuffers=2

enable_uart=1
dtoverlay=pi3-miniuart-bt
```

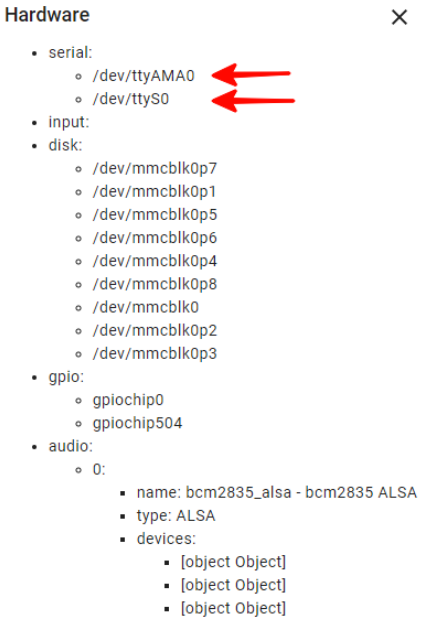
Check configuration in the Web Interface

Once you have modified the hardware setup, boot up the Raspberry Pi and check the configuration.

- Insert your SD card back inside the Raspberry Pi
- Wait for Hass.io to boot
- Connect to the web interface using your favourite browser
- Navigate to the **Supervisor -> System -> Hardware menu**



- Confirm the UART serial ports are visible for you (/dev/ttyAMA0 and /dev/ttyS0)



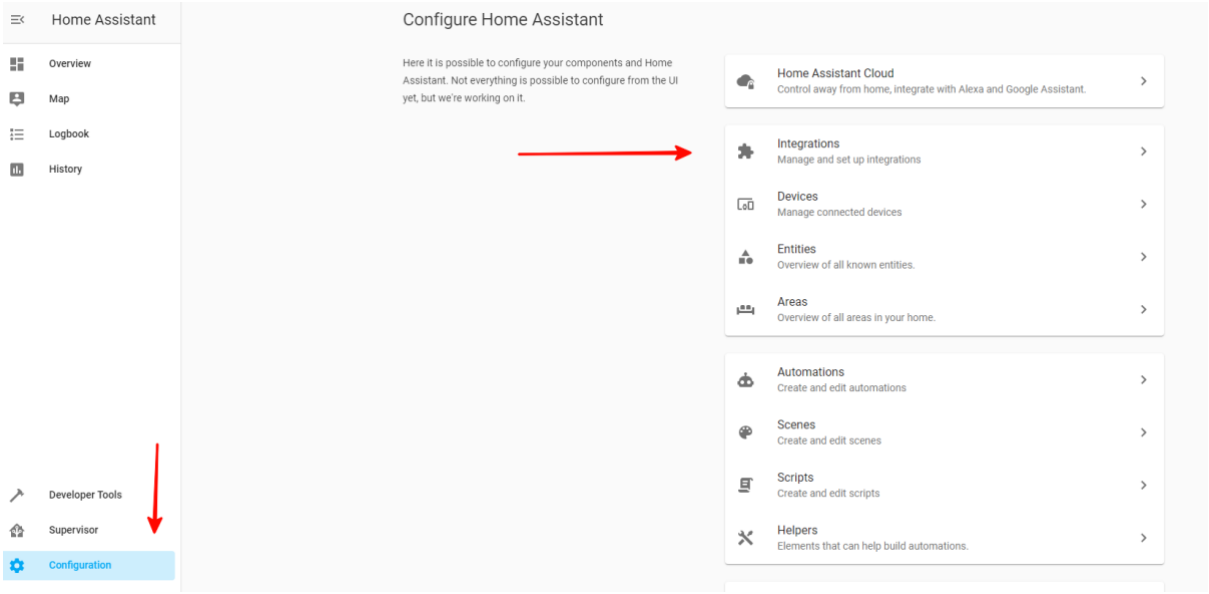
Zigbee HA Component configuration

To work with POPP ZB-Shield from Home Assistant we are using Zigbee Home Automation Component (https://www.home-assistant.io/components/zha/). It comes preinstalled into Hass.io so we only need to configure it properly to get it working.

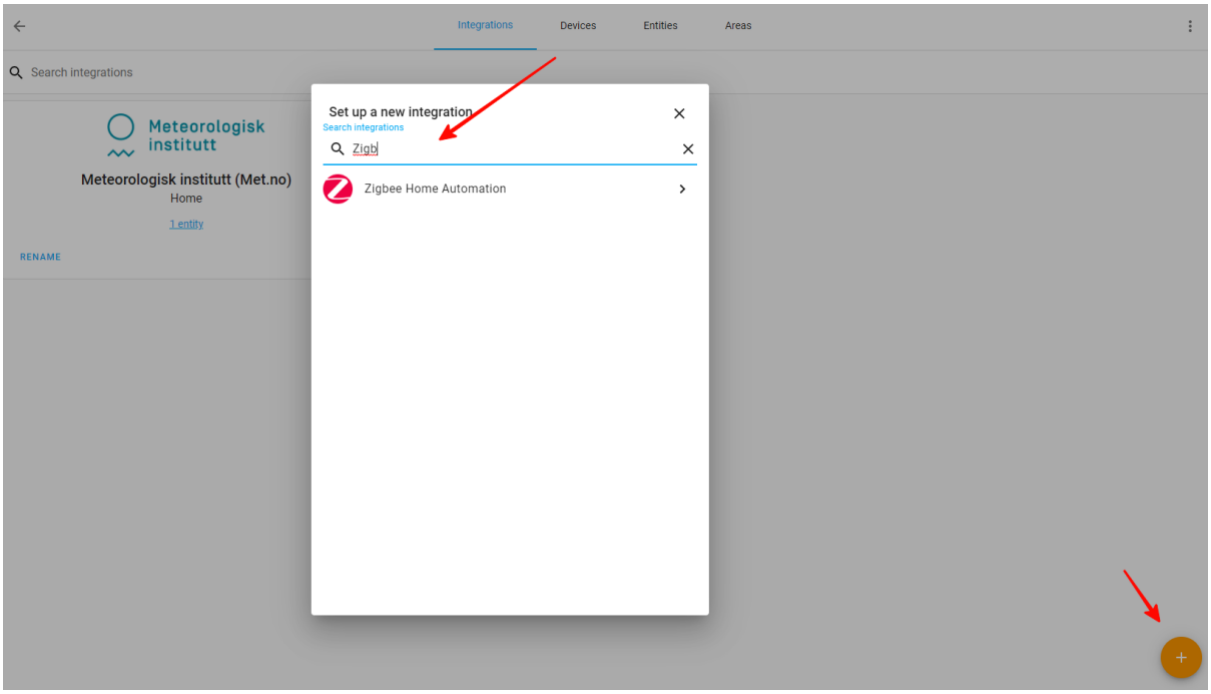
Configure ZHA component

To setup Zigbee Home Automation component to work properly with POPP ZB-Shield we need to:

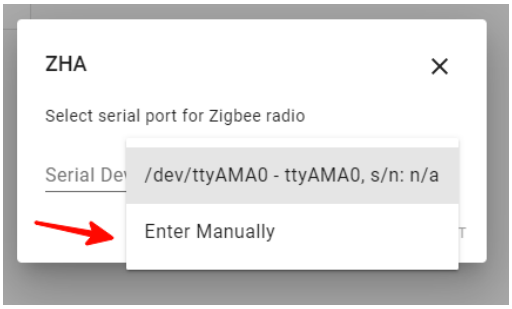
- Navigate to the **Configuration -> Integrations**



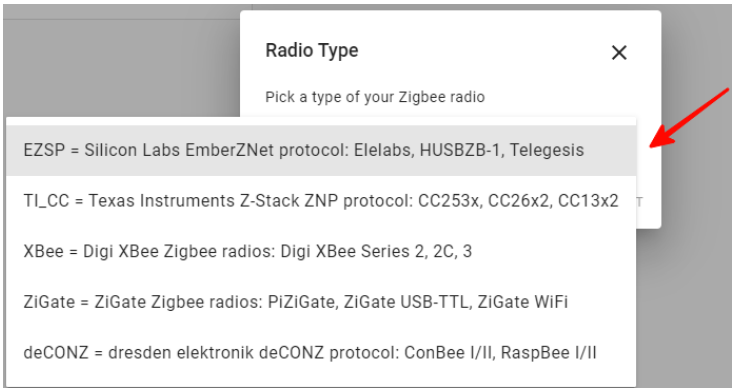
- Add new Integration and search for **Zigbee Home Automation**



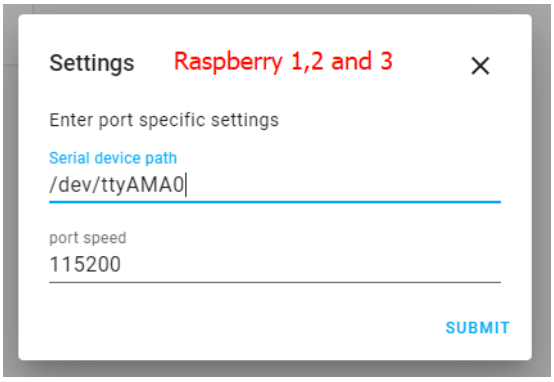
- Select **Enter Manually**



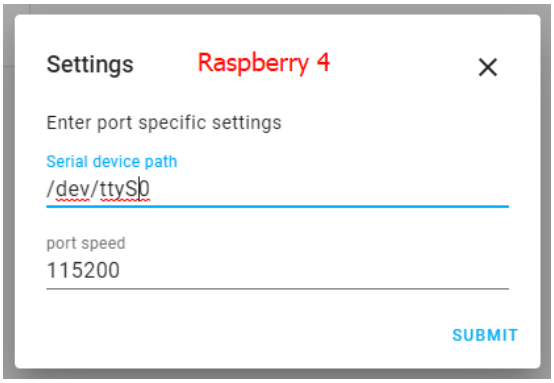
- Select **EZSP** radio type



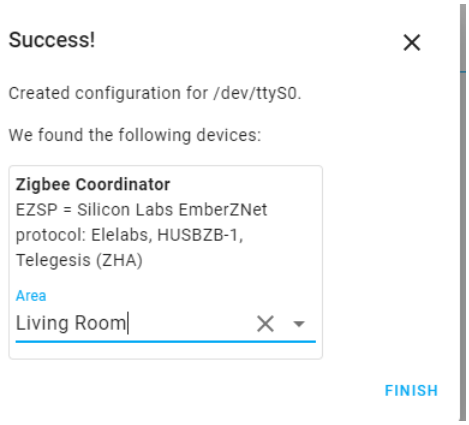
- For Raspberry Pi 1,2,3 enter **/dev/ttyAMA0** as Serial Port and select Baud rate 115200



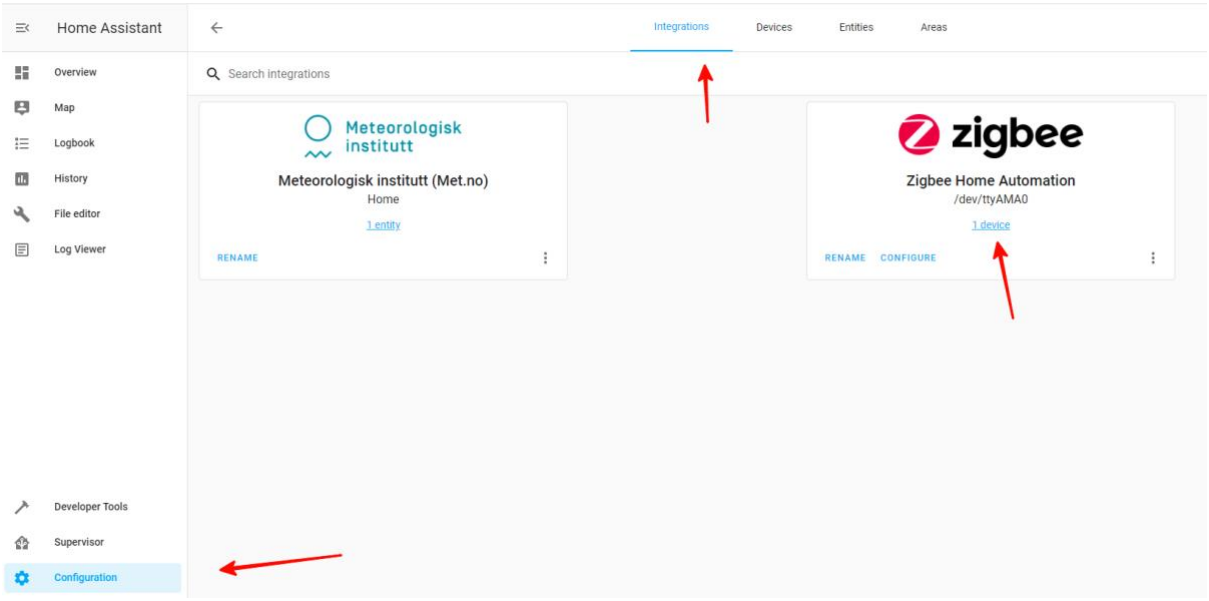
- For Raspberry Pi 4 enter **/dev/ttyS0** as Serial Port and select Baud rate 115200



- The installation should be successful



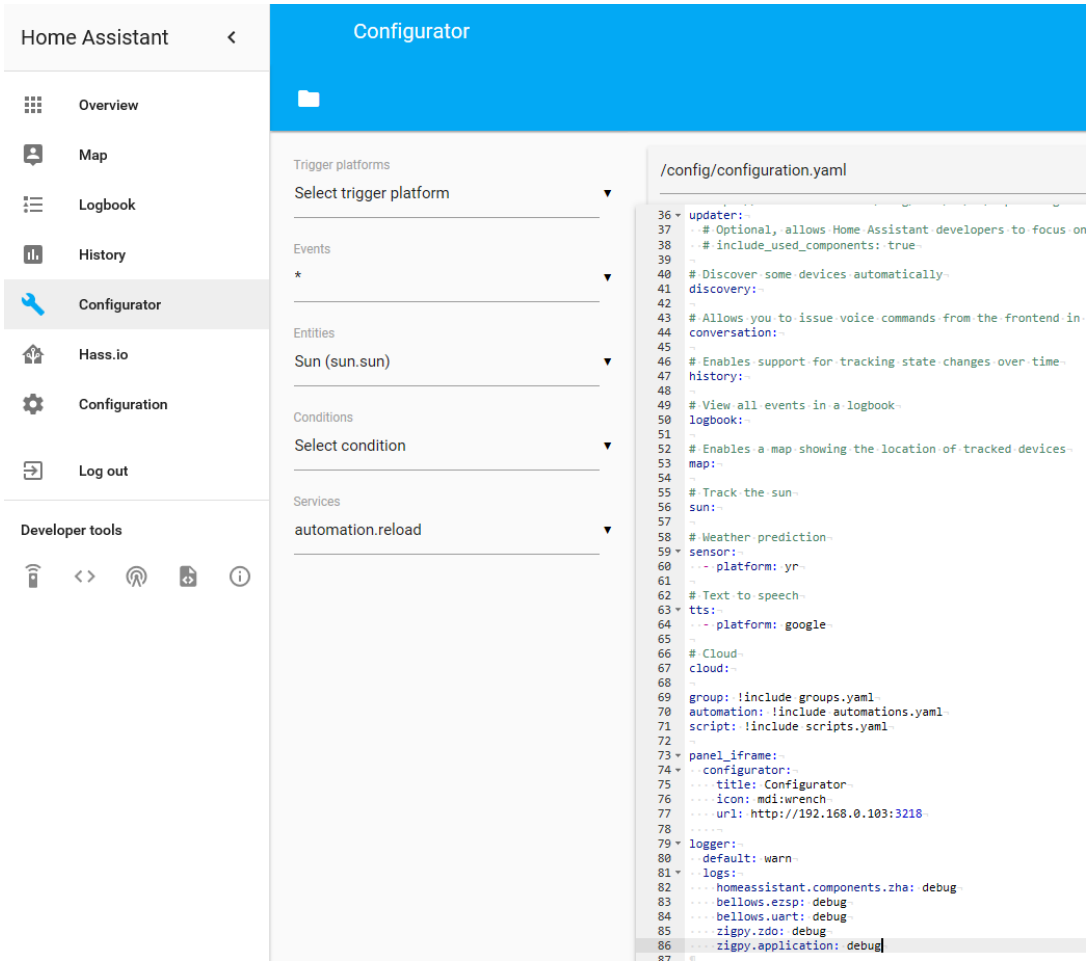
Now the Zigbee Integration should appear:



Setup Logging (optional)

To spot any potential issues it's good practice to enable logging, at least during the setup and installation period. To do it, just add the following lines to the configuration file **/config/configuration.yaml**:

```
logger:
  default: warn
  logs:
    homeassistant.components.zha: debug
    bellows.ezsp: debug
    bellows.uart: debug
    zigpy.zdo: debug
    zigpy.application: debug
```

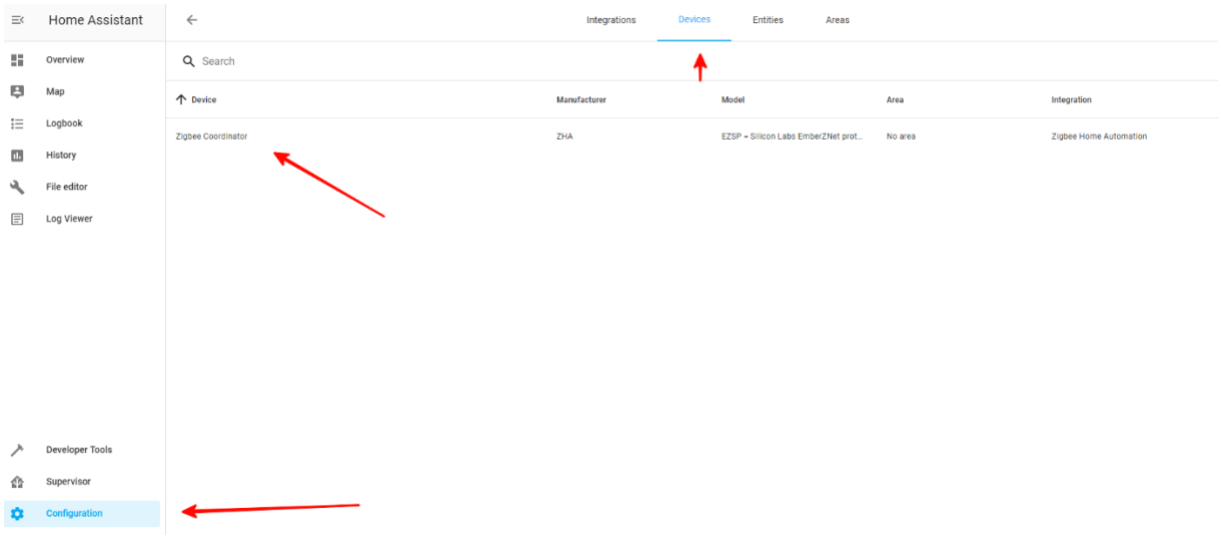

Home Assistant
Overview
Map
Logbook
History
Configurator
Hass.io
Configuration
Log out
Developer tools
Configurator
Trigger platforms
Select trigger platform
Events
*
Entities
Sun (sun.sun)
Conditions
Select condition
Services
automation.reload
/config/configuration.yaml
updater:
Optional, allows Home Assistant developers to focus on
include_used_components: true
Discover some devices automatically
discovery:
Allows you to issue voice commands from the frontend in
conversation:
Enables support for tracking state changes over time
history:
View all events in a logbook
logbook:
Enables a map showing the location of tracked devices
map:
Track the sun
sun:
Weather prediction
sensor:
- platform: yr
Text to speech
tts:
- platform: google
Cloud
cloud:
group: !include groups.yaml
automation: !include automations.yaml
script: !include scripts.yaml
panel_iframe:
configurator:
title: Configurator
icon: mdi:wrench
url: http://192.168.0.103:3218
logger:
default: warn
logs:
homeassistant.components.zha: debug
bellows.ezsp: debug
bellows.uart: debug
zigpy.zdo: debug
zigpy.application: debug

Zigbee HA Component Usage

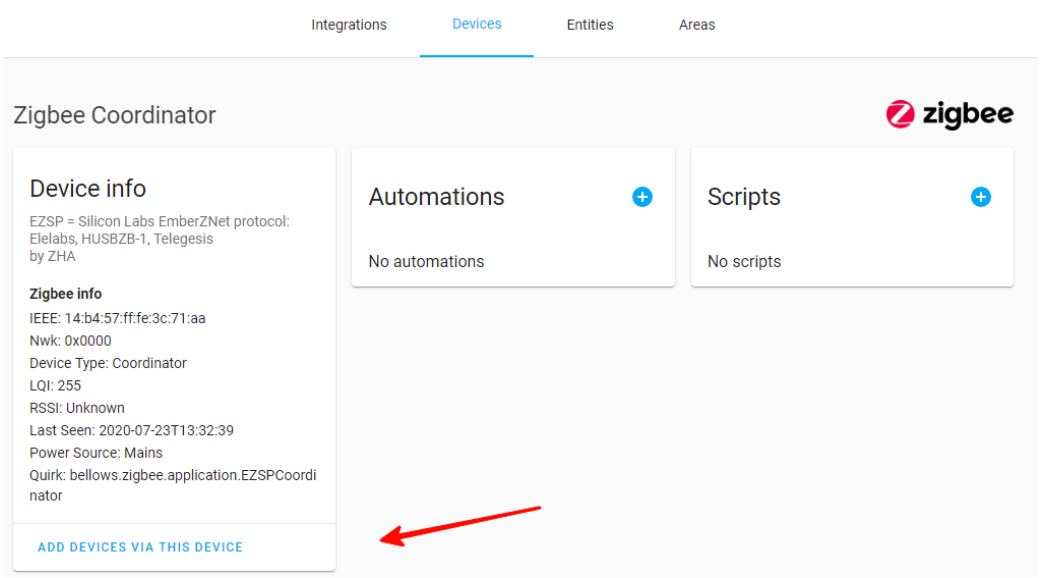
Once Zigbee Component is added and configured properly you can start to use it.

Add your devices to the Home Assistant

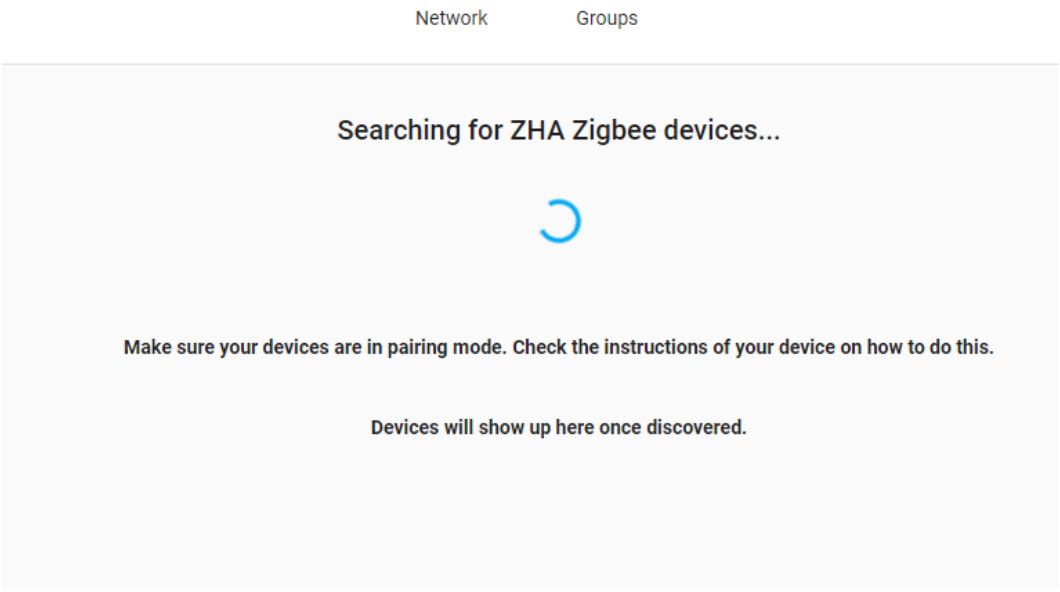
Open **Configuration** and go to **Devices** and **Zigbee Coordinator**



Start "**Add Devices via this device**"

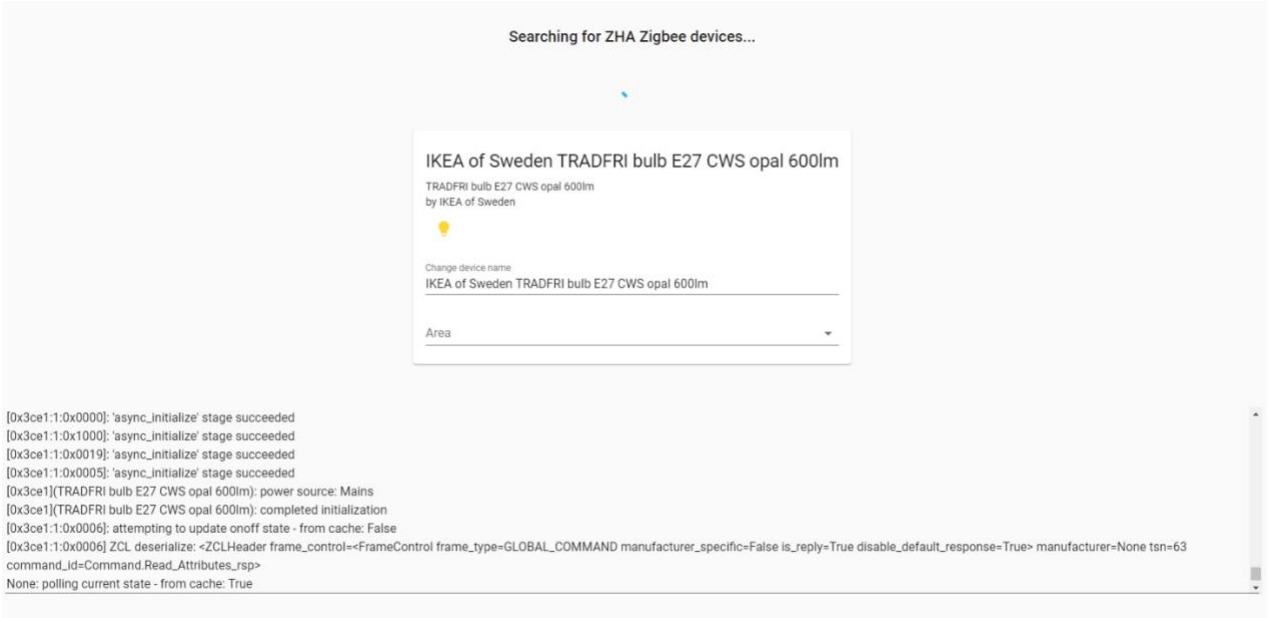


When you will call it, you have 60 seconds to add the device.



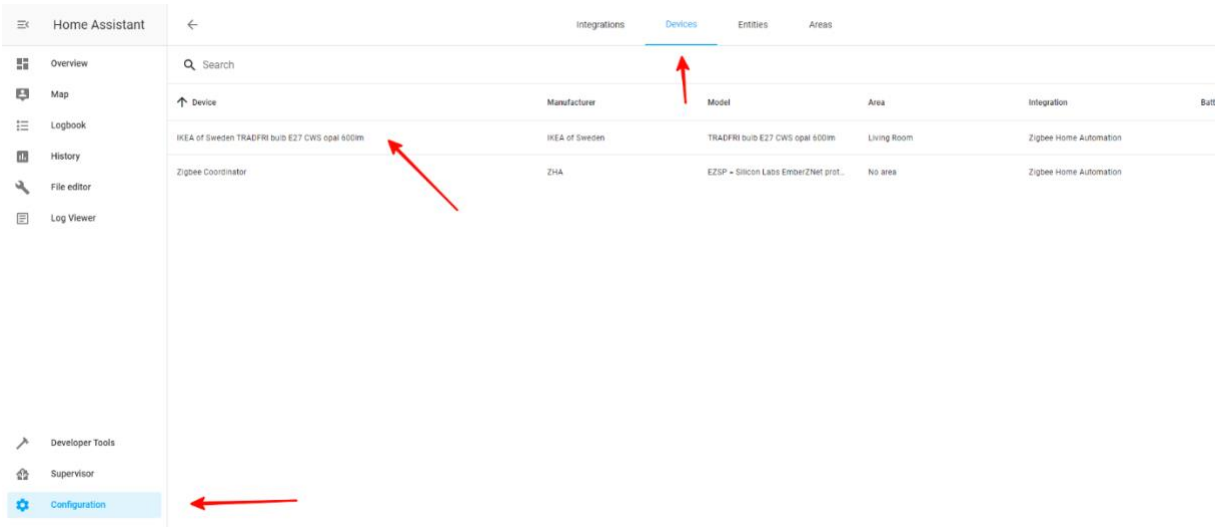
During this period, you need to follow Device manual to put it in Pairing mode. Sometimes you just need to give it power.

If the device is found, you will be able to see it in the logs (example device)

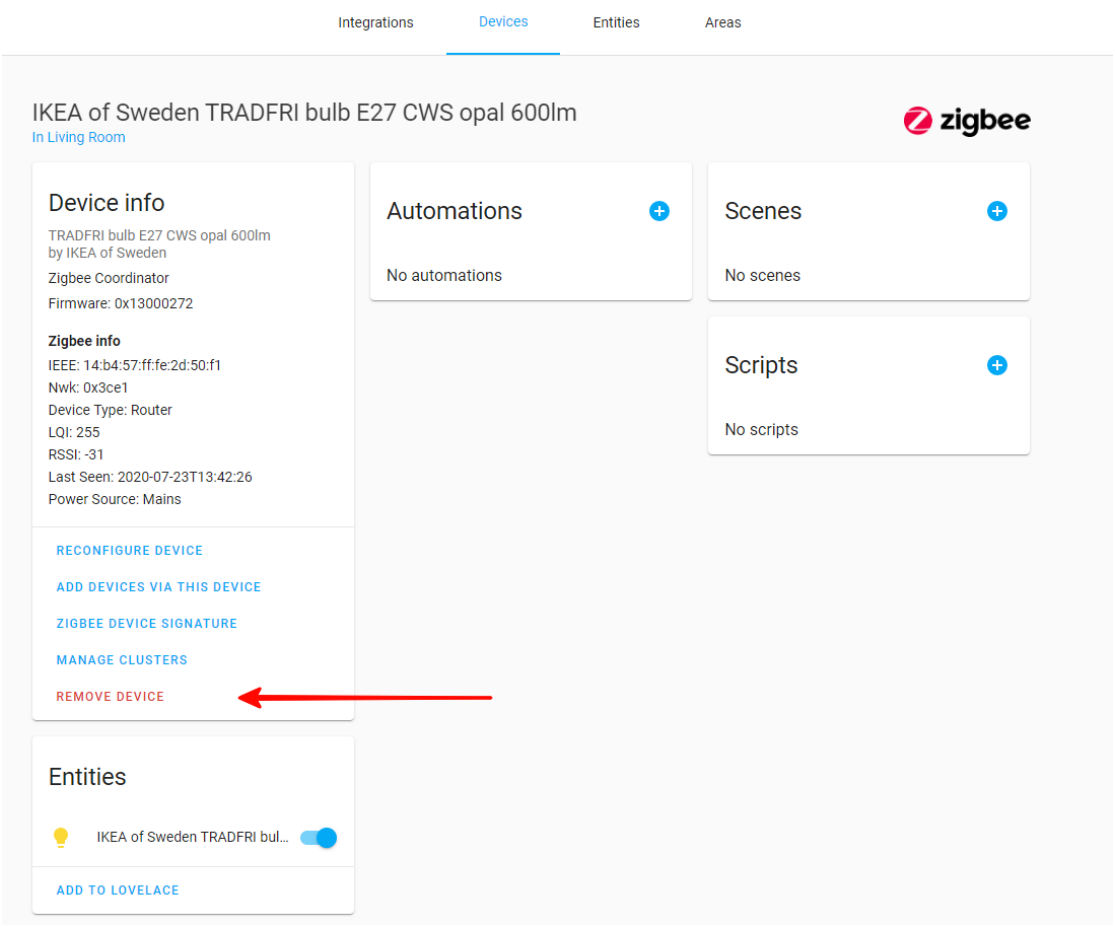


Remove your device from Home Assistant

Open **Configuration** and go to **Devices**.



Select the device, which you would like to remove



Once you call this service you can verify in the logs, that the device has left the network.

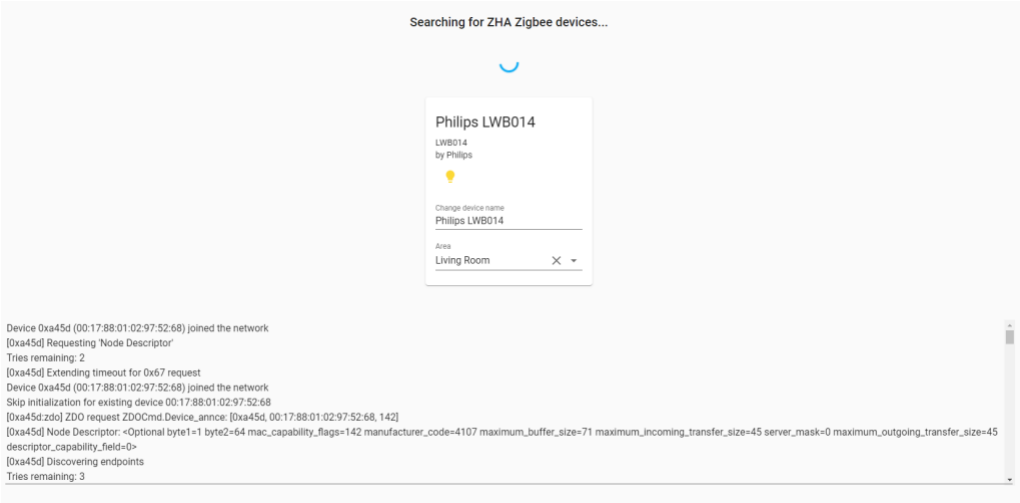
Example: Philips Hue Bulb

This example is done with Hue White Single bulb E26 but is applicable to other products as well.

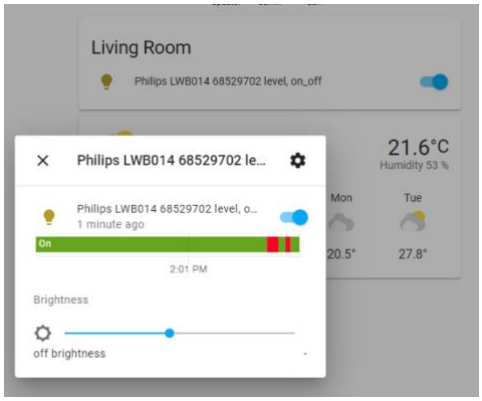
To control Philips Hue Light bulb using Home Assistant, one first needs to reset it.

Once it is reset, you can follow the regular process to Add it to the Home Assistant.

- Call **Add Devices** service as explained in Add devices section of this guide
- Power ON the Lightbulb
- Confirm it is added to the Home Assistant



Now you can control it directly or use in the scenarios.



Troubleshooting

If your issue is not described here or you need help resolving it, please contact support at **info@popp.eu.**