
UG4: OPEN HAB

This document describes how to use Elelabs ZigBee RPi Shield (https://elelabs.com/products/elelabs_zigbee_shield.html) with existing Home Automation platform called OpenHAB (<https://www.openhab.org/>).

Elelabs ZigBee RPi Shield firmware version, referenced in this guide: **5.10**

OpenHab2 software version, referenced in this guide: **v2.3.0**

This guide focuses on:

- Connect Elelabs RPi Shield to your Raspberry Pi
- Setup ZigBee Home Automation Binding in OpenHAB
- Troubleshooting
- ZigBee devices Pairing and Removal
- ZigBee devices examples

This guide DOES NOT focus on OpenHAB (openHABian) installation and initial configuration. Please follow the official instructions <https://docs.openhab.org/installation/openhabian.html>.

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Introduction

Elelabs ZigBee RPi Shield can be used with a Raspberry Pi with OpenHABian installed

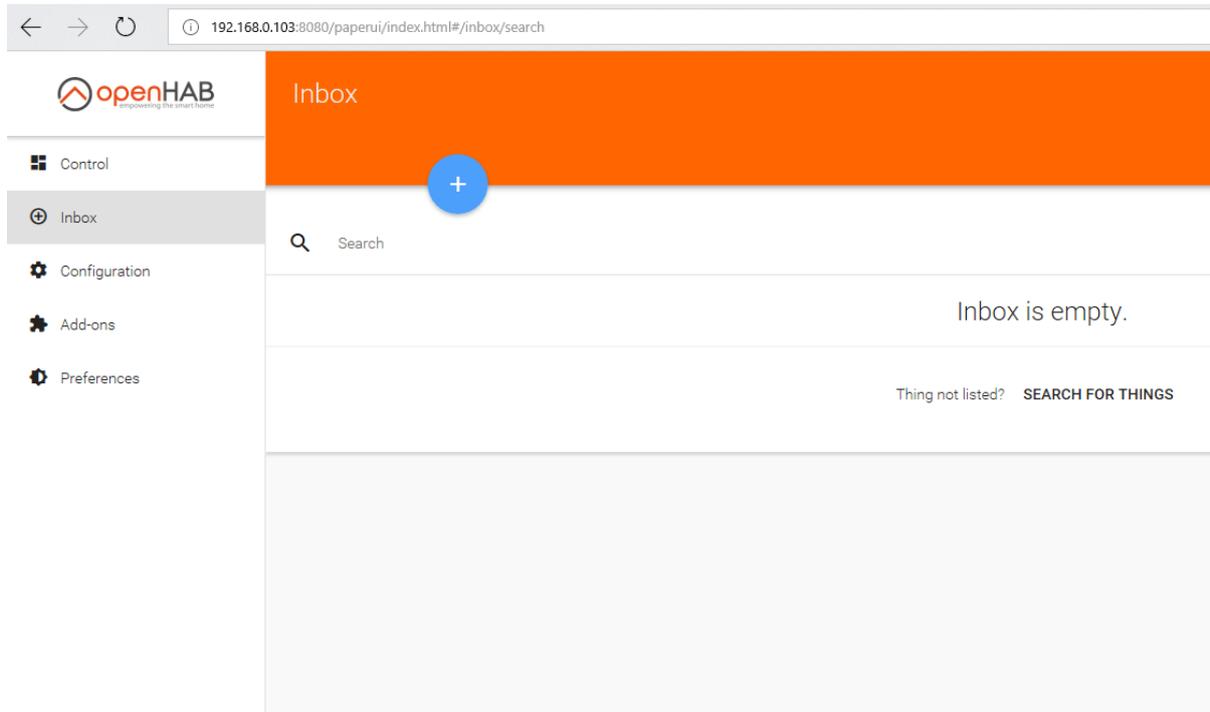


OpenHABian installed and running



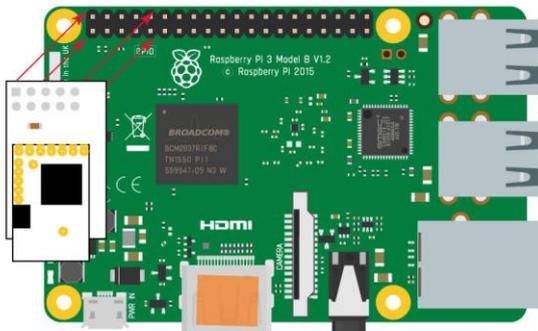
Initial setup and connection

This guide does not cover OpenHAB (openHABian) installation. We assume, that you can access OpenHAB Web Interface using your browser.



Insert the Elelabs ZigBee RPi Shield into your Host machine.

Usage with Raspberry Pi



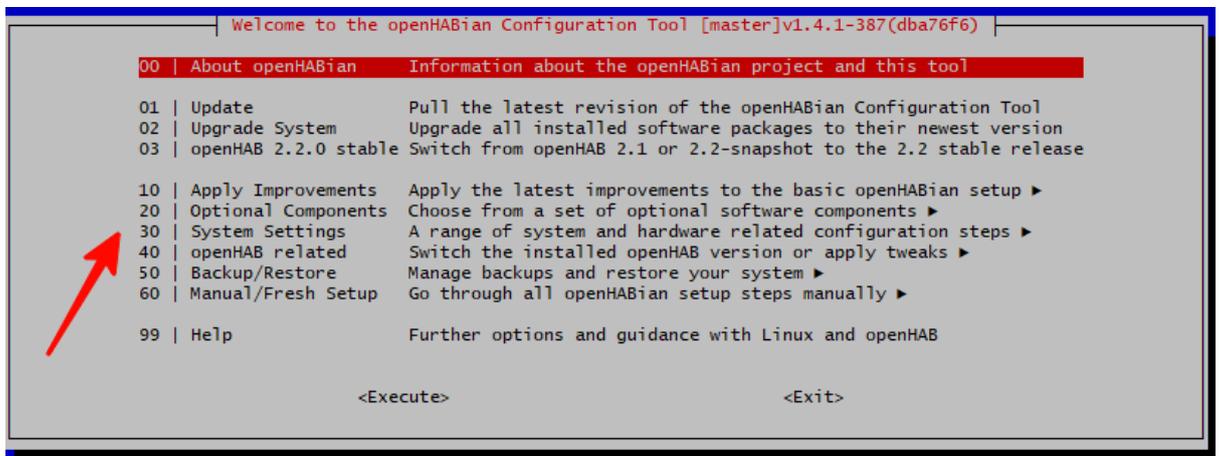
OpenHAB ZigBee configuration

To work with Elelabs ZigBee RPi Shield from OpenHAB we are using ZigBee Home Automation Binding (<https://docs.openhab.org/addons/bindings/zigbee/readme.html>). We need to install it additionally, as it is not installed by default.

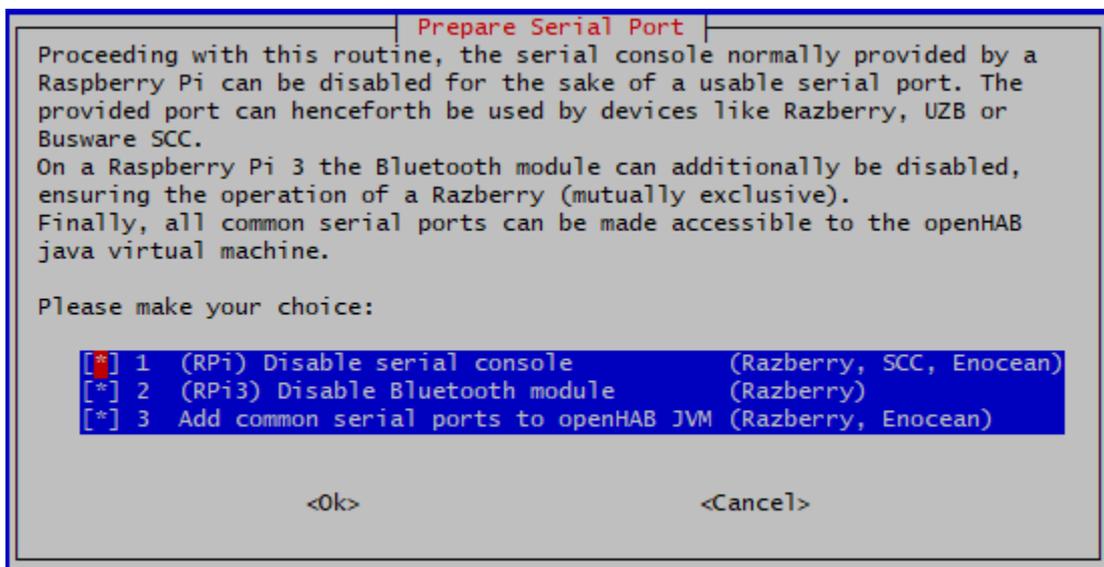
Raspberry Pi Serial Configuration

If you are using Raspberry Pi, you need to perform an additional step to enable UART, disable console interface and change Bluetooth configuration (for Raspberry Pi 3). To do it:

- Connect to the OpenHAB SSH console using your favourite tool (login:password **openharian:openharian**)
ssh openhabian@192.168.0.103
- Launch the configuration interface with
sudo openhabian-config
- Go to Serial Settings



- Select all the available settings: disable console, enable serial ports in OpenHAB, modify Bluetooth



- Exit the openHAB configuration
- Reboot
sudo reboot
- Wait for OpenHABian to boot

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:

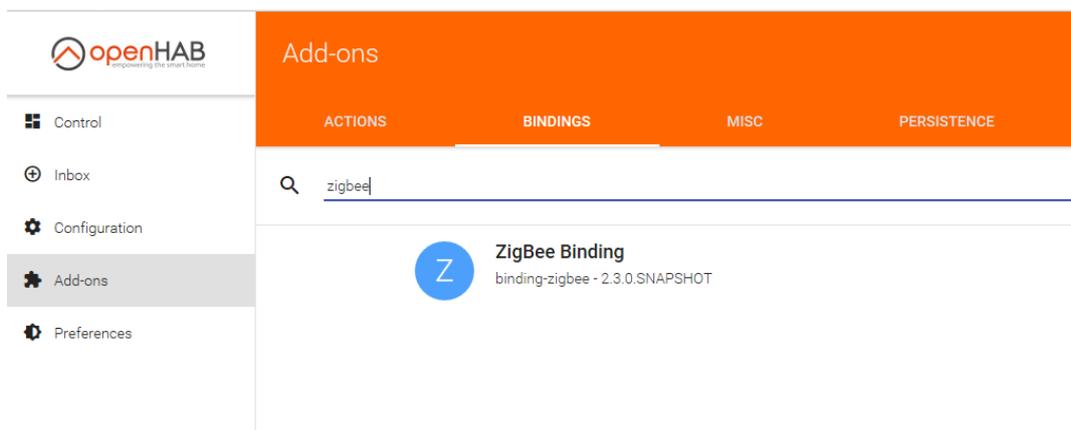
- Connect to the OpenHAB SSH console using your favourite tool (login:password **openharian:openharian**)
ssh openhabian@192.168.0.103
- Connect to "Karaf Console" with the following command (more about it you can read here (<https://docs.openhab.org/administration/console.html>)):
ssh -p 8101 openhab@localhost
- Run 2 commands:
log:set debug org.openhab.binding.zigbee
log:set debug com.zsmartsystems.zigbee
- Exit "Karaf Console" with Ctrl+D keyboard combination

Now you can view the logs either in the web browser or in the SSH console with the following command (<https://docs.openhab.org/administration/logging.html>) :

```
openhab-cli showlogs
```

Configure ZigBee Binding

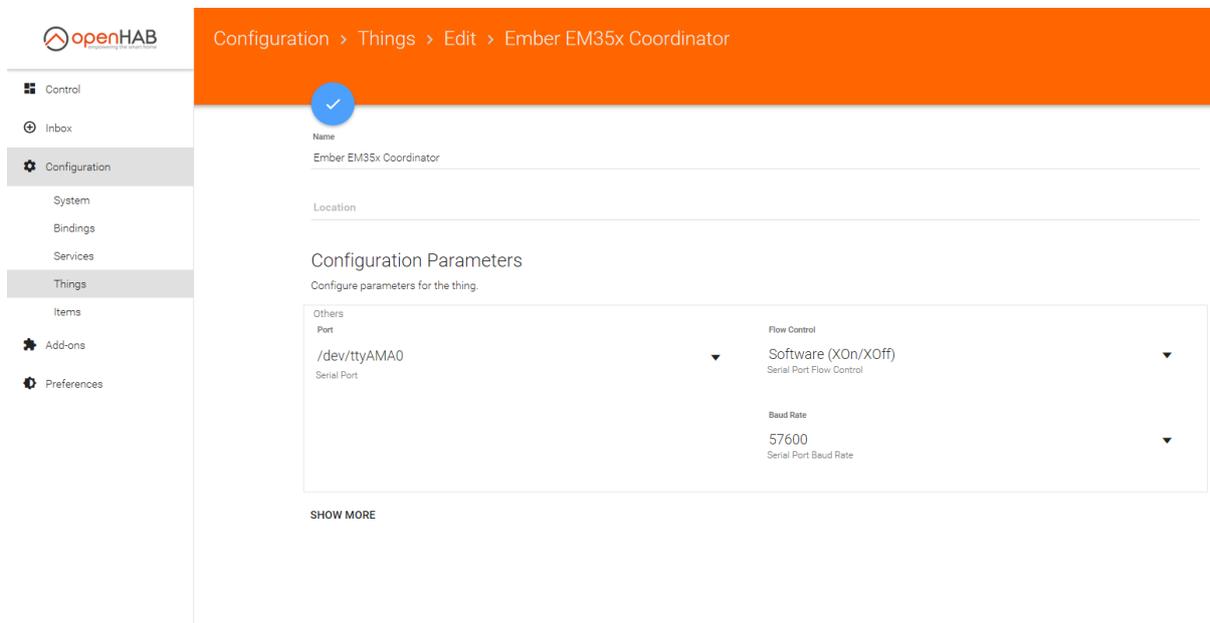
To setup ZigBee Home Automation binding to work properly with Elelabs ZigBee Raspberry Pi Shield, one need to install the ZigBee Binding in the Add-ons section of the Paper UI. Pay attention, that you need version \geq **v2.3.0**. Previous versions do not allow to use Software Flow Control.



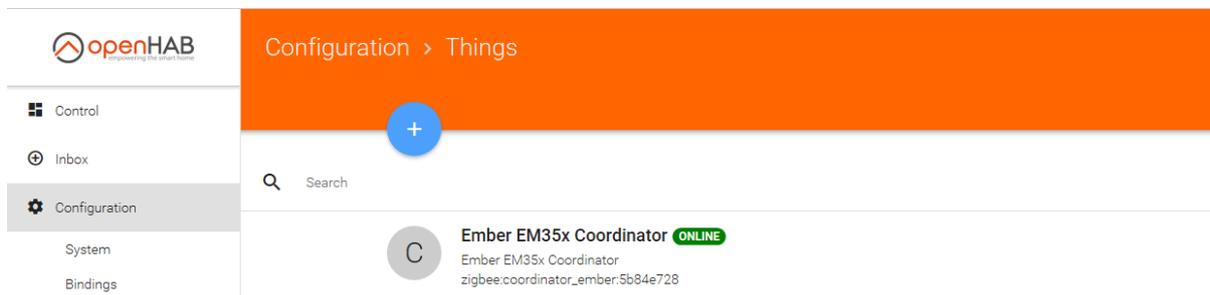
Once installed you can go to the **Configuration->Things** section of the menu and add new *Thing*. Select **ZigBee Binding -> Ember EM35x Coordinator** and then Configure it properly:

- Select **/dev/ttyAMA0** as Serial Port. If not seen, go to Troubleshooting section.
- Select **Software (XOn/XOff)** as Flow Control.
- Select **57600** as BaudRate.

Save new Thing.



When added, it will take up to 10 seconds to Initialise the component. If successful, then it will indicate as **ONLINE**. If it doesn't change to **ONLINE** go to Troubleshooting section.



The ZigBee Binding is now configured, and you can start using it.

ZigBee HA Binding Usage

Once ZigBee Binding is added and configured properly you can start to use it.

Add your devices to the OpenHAB

Open the **Inbox** section and press the scan button.



When you will call it, you have 60 seconds to add the device. It's easier to track the process in the logs. During this period, you need to follow Device manual to put it in Association mode. Sometimes you just need to give it power.

If the device is found, you will be able to see it in the logs and in the Web UI.

Remove your device from OpenHAB

Open **Configuration->Things** menu and press **Delete** button near the device.

Example: Ikea White E26 Lamp

This example is done with Ikea White E26 lamp. but is applicable to other products as well.

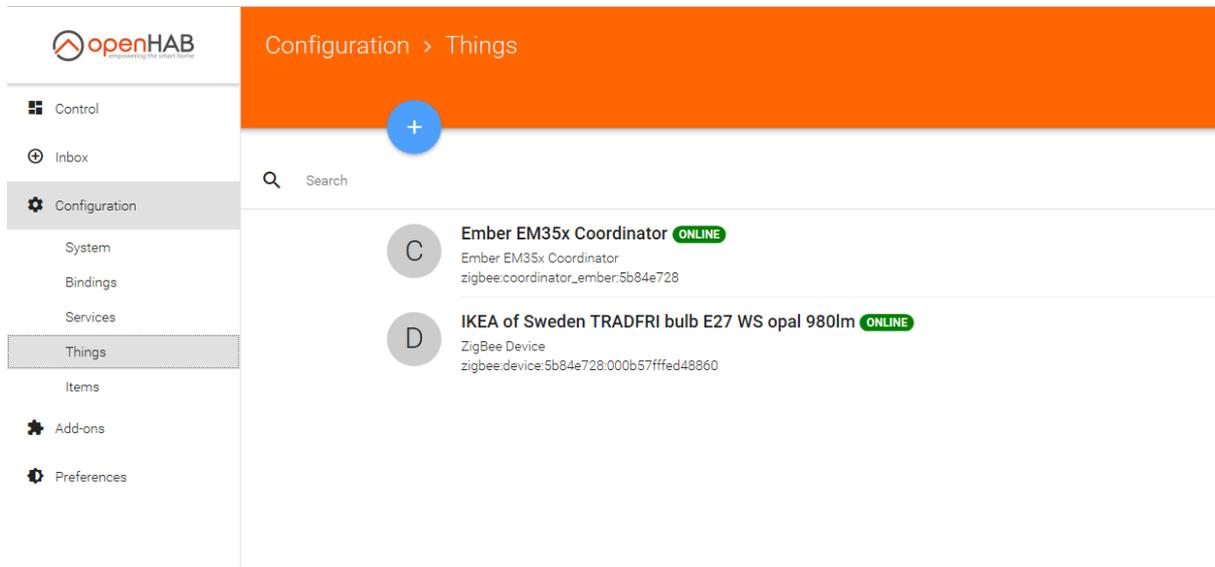


To control Ikea E26 bulb using OpenHAB, one first needs to reset it.

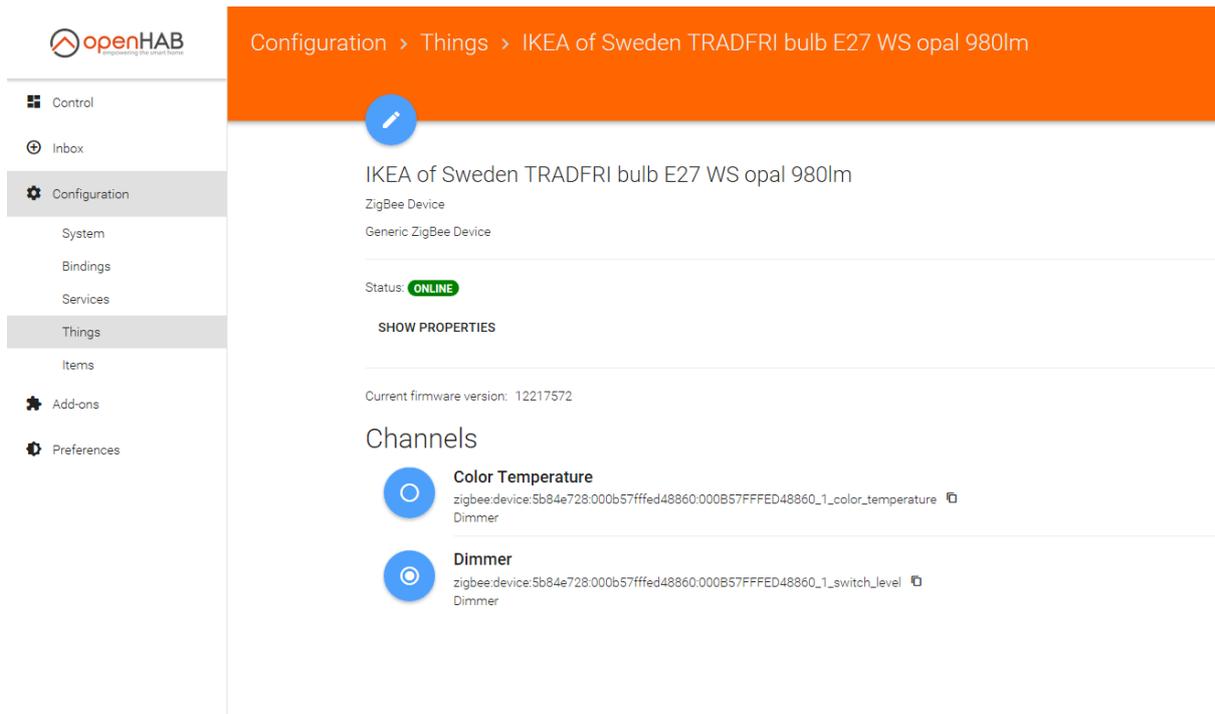
Once it is reset, you can follow the regular process to Add it to the OpenHAB.

- Call Scan procedure using ZigBee Binding
- Power ON the Lightbulb
- Confirm it's added to the OpenHAB

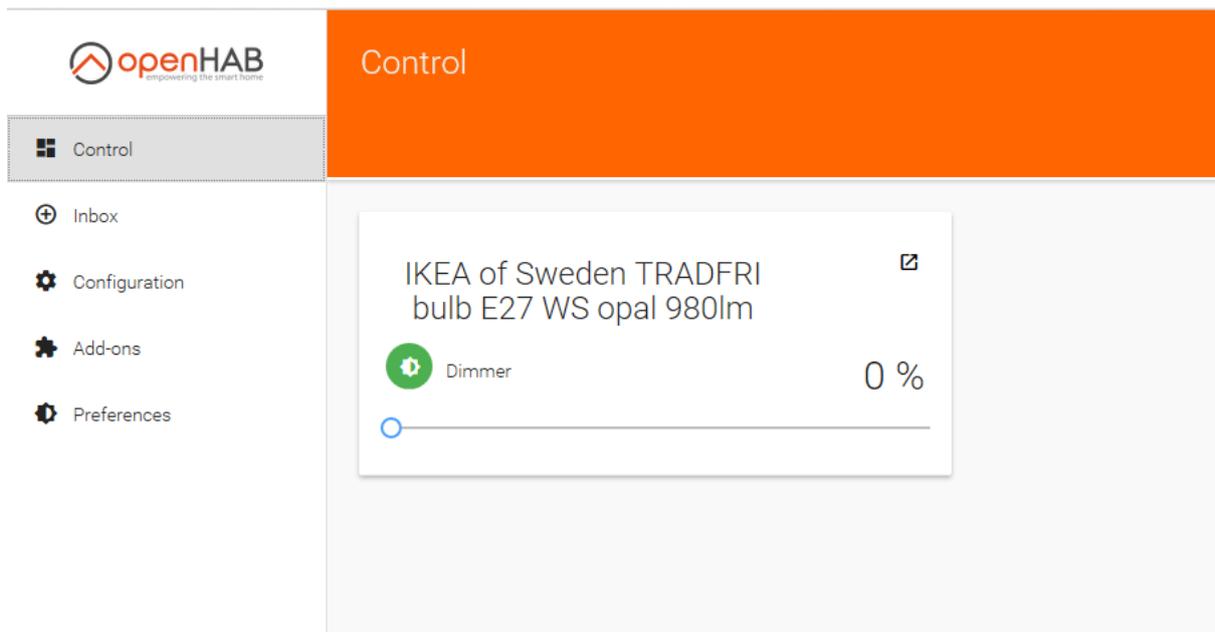
Now you can control it directly or use in the scenarios.



Once device is added, you can configure it and create new control elements for it:



Then it's available for control.



Troubleshooting

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

There is no /dev/ttyAMA0 port shown

This is probably due to wrong Serial configuration within OpenHABian platform.

It's better to check:

- Execute the following command:

```
groups openhab
```

Check that there are groups *dialout* and *tty* in the output

- View the configuration file:

```
cat /boot/cmdline.txt
```

Confirm it looks like (most important is that there is NO `console=ttyAMA0,115200`):

```
dwc_otg.lpm_enable=0 console=tty1 root=/dev/mmcblk0p2 rootfstype=ext4  
elevator=deadline rootwait
```

- View the configuration file:

```
cat /boot/config.txt
```

Confirm it contains this line:

```
dtoverlay=pi3-miniuart-bt
```

- View the configuration file:

```
cat /etc/default/openhab2
```

Confirm it contains this line:

```
EXTRA_JAVA_OPTS="-  
Dgnu.io.rxtx.SerialPorts=/dev/ttyUSB0:/dev/ttyS0:/dev/ttyAMA0"
```

If everything is correct, just try rebooting the OpenHAB or contact us at info@elelabs.com

OpenHAB ZigBee Binding is OFFLINE

If you have configured ZigBee Binding properly but it doesn't change its status within 10 seconds, start looking into the logs. If there is practically no log activity, just a few packets from OpenHAB to /dev/ttyAMA0, then probably Serial Interface is configured not properly. Most probably Serial Console is not disabled, or Bluetooth (for Raspberry Pi 3). Check the same steps as in the previous chapter (There is no /dev/ttyAMA0 port shown).

ZigBee Binding is ONLINE, but no device added during Scan period

First, investigate the logs and confirm you can see the start of the communication between OpenHAB and ZigBee Elelabs Raspberry Pi Shield. If there is any error, contact us at info@elelabs.com.

There are no packets from the device at all

This most probably means that your device is already part of the different network and just can't join your new network. Try to reset it, using the manufacturer specific reset procedure.