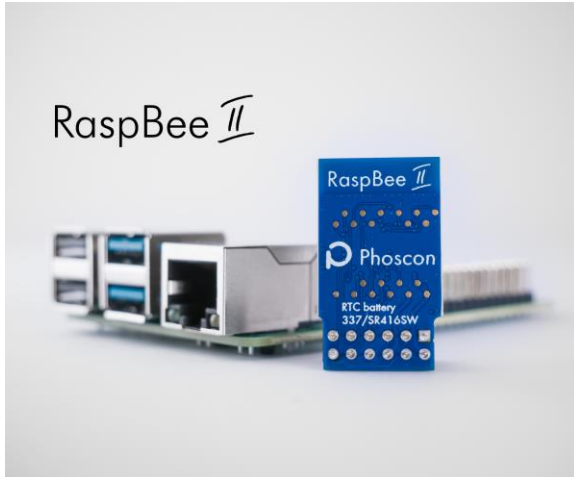


RaspBee II – ZigBee USB Gateway

User Manual



The universal Zigbee USB gateway

- Unites Zigbee devices of many vendors
- A cloud free solution
- strong signal range via power-amplifier
- works with popular Home Automation Systems

Technical specification

Name	Description
Rated voltage	DC 5,0 V
Transmission power	10 mW
Signal range	200 m in free line of sight
Radio frequency	2.4 GHz
Radio standard	IEEE 820.15.4 / Zigbee
Flash memory	256 kByte
RTC battery type	337/SR416SW
Battery life	At least 2 years*
Storage temperature	-20 °C bis 55 °C
Operating temperature	-20 °C bis 55 °C
Operating systems	Raspbian, Docker
Dimensions	30 mm × 18 mm × 10 mm

*By keeping the Raspberry Pi powered at all times, the battery life can increase up to 8 years.

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Installation

The deCONZ application is a tool to configure, control and monitor Zigbee networks with the RaspBee II.

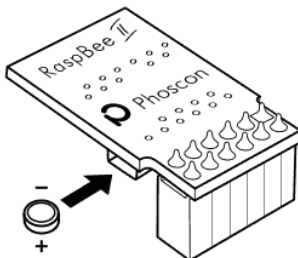
The following sections describe the installation steps of deCONZ for various platforms.

Supported platforms

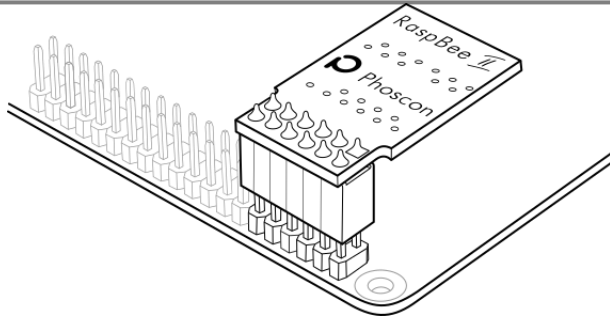
- [Raspbian](#)
- [Docker](#)

Connection

1. Insert the battery of type 337/SR416SW as shown in the battery slot.



2. The RaspBee II must be placed on the Raspberry Pi header as follows:



Important: The RaspBee II must not be placed in an offset position, as this will damage the module!

Raspbian

Supported Raspberry Pi models and distributions

- Raspberry Pi 1, 2B, 3B, 3B+ and 4B
- Raspbian Jessie
- Raspbian Stretch
- Raspbian Buster

Note

The following steps describe the manual installation of deCONZ. Alternatively a preinstalled [SD-card image](#) can be used.

Installation

1. Configure user access rights of the serial interface

```
sudo raspi-config
```

Interfacing Options → Serial

- Would you like a login shell accessible over serial? → **No**
- Would you like the serial port hardware to be enabled? → **Yes**

Note: Changes to access rights only become active after a restart.

2. Import Phoscon public key
3.

```
wget -O - http://phoscon.de/apt/deconz.pub.key | \
sudo apt-key add -
```
4. Configure the APT repository for deCONZ

Stable

```
sudo sh -c "echo 'deb http://phoscon.de/apt/deconz \
$(lsb_release -cs) main' > \
/etc/apt/sources.list.d/deconz.list"
```

Beta (alternative)

```
sudo sh -c "echo 'deb http://phoscon.de/apt/deconz \
$(lsb_release -cs)-beta main' > \
/etc/apt/sources.list.d/deconz.list"
```

5. Update APT package list

```
sudo apt update
```

6. Install deCONZ

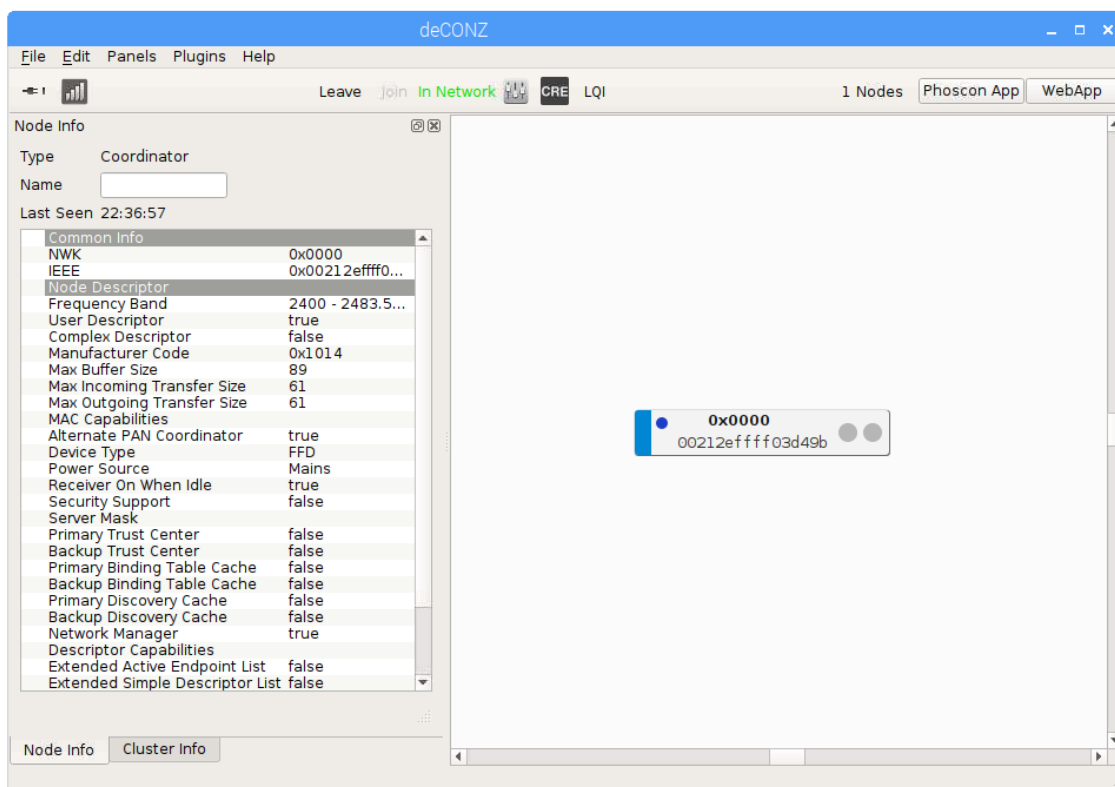
```
sudo apt install deconz
```

7. Update WiringPi (only needed for Raspberry Pi 4B)

8. `cd /tmp`
9. `wget https://project-downloads.drogon.net/wiringpi-latest.deb`
`sudo dpkg -i wiringpi-latest.deb`

After the installation deCONZ can be started via the application menu.

Menu > Programming > deCONZ



Now the first Zigbee devices can be paired via the Phoscon App. Further information can be found in the [Phoscon App documentation](#).

Docker

Supported host systems

- Linux x86_64/amd64
- Linux armv7 (e.g. Raspberry Pi)
- Linux arm64

To run deCONZ in a Docker container, we recommend the Docker image **marthoc/deconz**, which is maintained by the community. This image supports on amd64, arm64 and armhf platforms.

<https://hub.docker.com/r/marthoc/deconz>

Installation

The following steps describe how to start the deCONZ container on a Linux host system.

1. Configure user access rights of the serial interface

```
sudo raspi-config
```

Interfacing Options → Serial

- Would you like a login shell accessible over serial? → **No**
- Would you like the serial port hardware to be enabled? → **Yes**

Note: Changes to access rights only become active after a restart.

2. Create directory for persistent configuration

```
mkdir -p ~/.local/share/dresden-elektronik/deCONZ
```

3. Start deCONZ Docker container

```
4. docker run -d \
5.     --name=deconz \
6.     --net=host \
7.     --restart=always \
8.     -v /etc/localtime:/etc/localtime:ro \
9.     -v ~/.local/share/dresden-
    elektronik/deCONZ:/root/.local/share/dresden-elektronik/deCONZ \
10.    --device=/dev/ttyAMA0 \
    marthoc/deconz
```

With this configuration deCONZ runs in a Docker container on port 80.

Now the first Zigbee devices can be paired via the Phoscon App. Further information can be found in the [Phoscon App documentation](#).

A description of all available parameters as well as the use of Docker-Compose and VNC to access the deCONZ GUI can be found in the [Container Documentation](#).

Radio certification

United States (FCC)

FCC ID: XVV-RASPBEE2

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications not expressly approved by this company could void the user's authority to operate this equipment (FCC section 15.21).

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

List of applicable FCC / ISED rules

FCC: 47CFR Part 15C

ISED: RSS-247

Specific operational use conditions

The module is designed to be used on Raspberry Pi Single board computer. The OEM integrator has to follow all rules stated in this manual. Since this is a limited module some restrictions stated in following section apply.

If a firmware different from firmware delivered by module manufacturer is used, Transmit power registers need to be configured 0x0C for Channel 1-25 and 0x0F for channel 26.

Limited module procedures

Due to the fact that this RF Module is not equipped with an own shielding, the end-product incl. this RF Module has to show compliance to the FCC rules (15C / radiated emissions).

(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. Additional measurements (15C) and/or equipment authorizations (e.g either a complete new certification or a Class II Permissive Change) may need to be addressed depending on co-location or simultaneous transmission issues if applicable.

In the event that these conditions cannot be met, or when installing this module in another host as tested in this FCC filing, then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Trace antenna designs

not applicable, the RF part is fully integrated on the module.

RF exposure considerations

The module is approved as mobile device and therefore can be placed at least 20 cm away from any user.

Antennas

The module has an integrated PCB antenna. There is no option provided to connect a different antenna.

Label and compliance information

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following:

“Contains FCC ID: XVV-RASPBEE2”

Information on test modes and additional testing requirements

Test modes are available with Atmel Studio. For further information contact us.

Additional testing, Part 15 Subpart B disclaimer

As long as these conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.). Host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Information that must be placed in the end user manual:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in this manual.

Innovation, Science and Economic Development (ISED) Canada

IC: 8720A-RASPBEE2

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with radio frequency exposure limits set forth by ISED Canada for an uncontrolled environment.

Cet équipement est conforme aux limites d'exposition aux radiofréquences définies par ISDE Canada pour un environnement non contrôlé.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

European Union (RED)

The RaspBee II is compliant for use in European Union countries.

Hereby, dresden elektronik ingenieurtechnik gmbh declares that the radio equipment type RaspBee II is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <https://phoscon.de/de/raspbee2/techspec>

If the RaspBee II is incorporated into a product, the manufacturer must ensure compliance of the final product to the European harmonized EMC and low-voltage/safety standards. A Declaration of Conformity must be issued for each of these standards and kept on file as described in Annex II of the RED Directive.

The manufacturer must maintain a copy of the product documentation and ensure the final product does not exceed the specified power ratings, antenna specifications, and/or installation requirements as specified in the user manual. If any of these specifications are exceeded in the final product, a submission must be made to a notified body for compliance testing to all required standards.

If a firmware different from firmware delivered by module manufacturer is used, for European Union Transmit power in power register need to be configured 0x0C or lower for all Channels.

Ordering Information

Name	Order No.
RaspBee II	BN-600108