

Assembly Guide for senseBox:bike

Welcome to the senseBox:bike assembly guide!

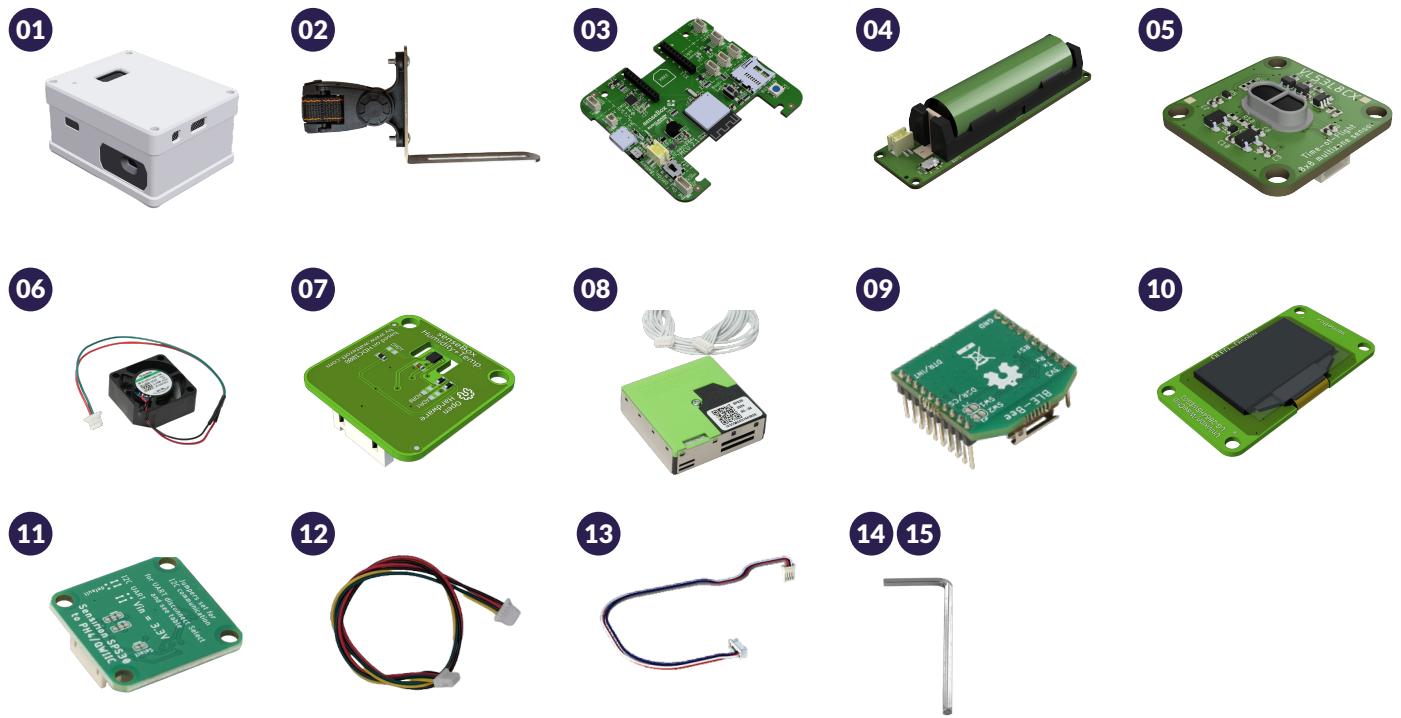
This guide shows you how to set up and use your senseBox:bike to collect data while riding your bike.

If you have any questions or need support, feel free to contact us at kontakt@reedu.de

We wish you many enjoyable rides with your senseBox:bike!

Component list

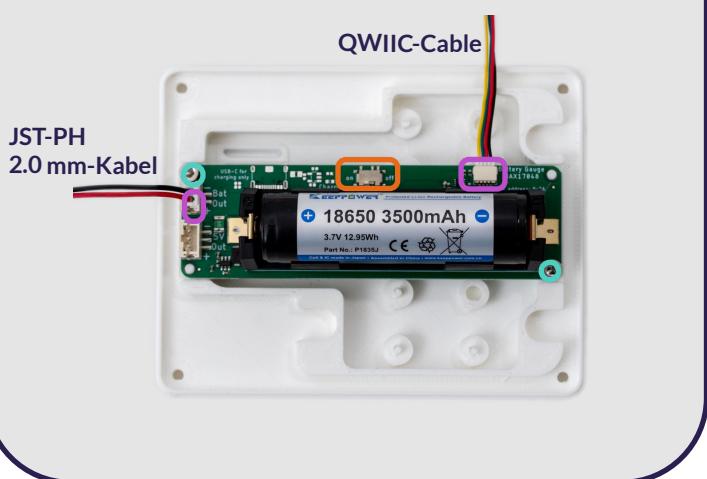
1. Enclosure: bottom, lid, frame, as well as small additional components and screws;
2. Mount for the seat post;
3. senseBox microcontroller (MCU S2);
4. Battery with battery board;
5. Time of Flight (ToF) sensor VL53L8CX;
6. Fan with integrated cable;
7. Temperature and humidity sensor HDC1080;
8. Particulate matter sensor SPS30 + QWIIC-Cable (40cm);
9. Bluetooth Bee;
10. OLED display;
11. Adapter board for Sensirion SPS30;
12. 5x QWIIC cables (2x20cm and 3x10cm);
13. 1x JST-PH 2.0 mm-Cable (20cm);
14. Allen key 2.0mm;
15. Allen key 2.5mm.



01

Mount the battery board

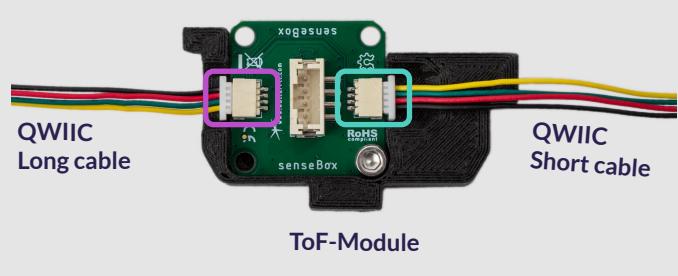
Attach the battery board to the base of the housing using **two screws**. Then insert the battery (note: pay attention to the positive and negative terminals) and connect the battery board with the corresponding **cable**. Also make sure that the battery board is switched on by ensuring the switch is set to “**On**.”



02

Insert and connect the ToF sensor

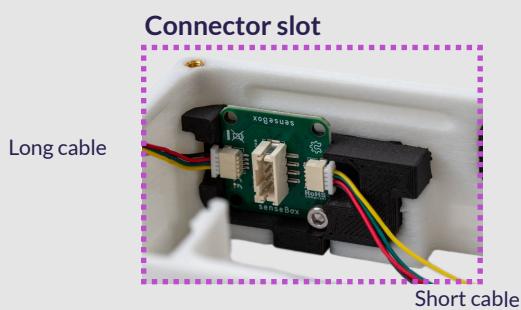
Insert the ToF sensor into the designated additional component so that the black cap of the sensor fits exactly into the corresponding cutout and the label (VLC) is positioned at the top of the sensor. Now connect a **long QWIIC cable** to the left port and a **short QWIIC cable** to the right port of the sensor



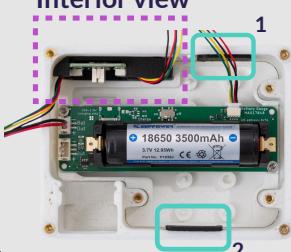
03

Insert the ToF sensor

Insert the ToF sensor into the frame of the housing. Also insert the other **additional components** into the designated cutouts of the frame.



Interior view



Additional components



04

Attach the bottom part

Using **four long screws**, fasten the base to the frame.



05

Insert fan

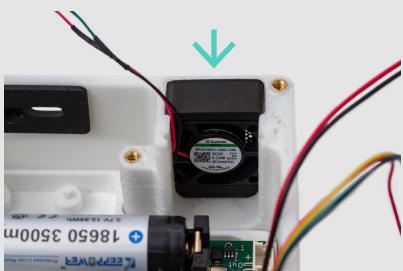
Insert the **fan** into the designated additional component (Fan Module).



06

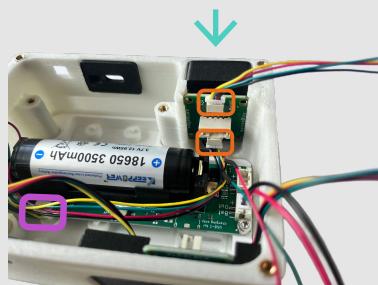
Insert fan with filter into the enclosure

Then place the **set (fan + filter)**, into the housing. Make sure that the cable runs along the top left and that the label on the fan faces inward.

**07**

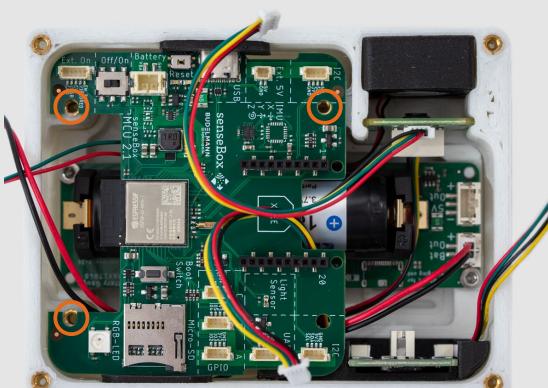
Connect and position the sensor

Now connect the **temperature and humidity sensor** with **two QWIIC cables** and slide it in front of the fan. Connect the lower cable to the **QWIIC port** on the battery board.

**08**

Insert and fasten the MCU S2

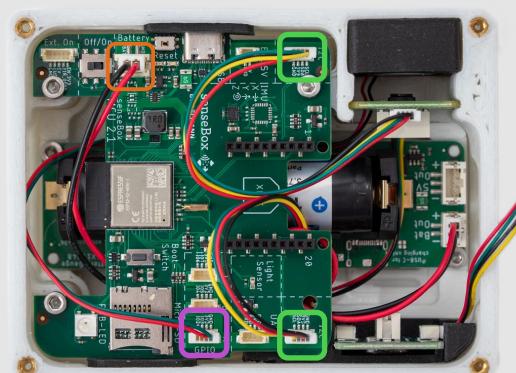
Place the MCU S2 into the housing as shown and secure it with **three short screws**.

**09**

Connect the sensor cables to the MCU S2

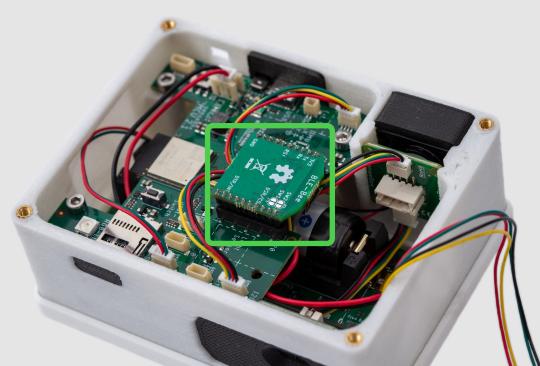
Now connect the cables to the MCU S2:

Fan - **GPIO A**
 Temperature and humidity sensor - **I2C**
 ToF sensor (short cable) - **I2C**
 Battery - **Battery** (near On/ Off)

**10**

Insert Bluetooth Bee

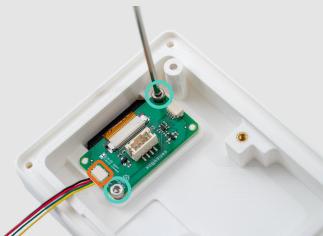
Plug the **Bluetooth Bee** into the designated XBEE slot on the MCU S2.



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Prepare and mount OLED display

Remove the protective film from the OLED display, connect a **short QWIIC cable** to the left side, and then fasten the display to the lid with **two short screws (8mm)**.

**12**

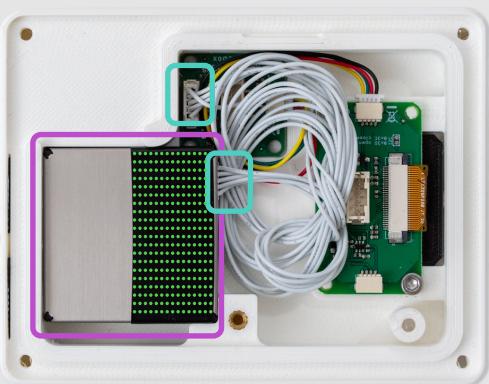
Insert and connect the adapter board

First, connect the **adapter board** of the particulate matter sensor to the OLED display using the **QWIIC cable**, then insert it into the lid.

**13**

Insert and protect the PM sensor

Place the **particulate matter sensor** into the lid and connect **the cable** to the adapter board. Also apply **two strips of insulating tape** to the sensor as shown, to protect it from the pins of the Bluetooth Bee.

**14**

Fasten the PM sensor

Now secure the particulate matter sensor using the **Fine Dust Sensor Mount** and fasten it with screw.

**15**

Mount the switch extension

Place the **Power Switch Lever** additional component over the On/Off switch of the MCU S2 and secure it internally with the **Power Switch Clamp** component.

**16**

Final connection and test

Connect the **long cable** of the **ToF sensor** to the OLED display and test whether the MCU S2 can be switched on and off from the outside using **the switch**.

Note: To make it easier to connect the long ToF cable, you may need to detach the OLED display temporarily from the LID.



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Attach the lid

Fasten the lid with **long screws**, one in each corner.



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Mount the holder

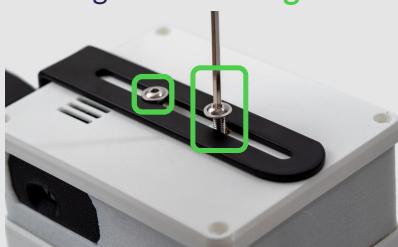
Connect the seat post mount to the L-bracket using two screws.



19

Attach the L-bracket

Then fasten the L-bracket to the base of the housing with **two long screws**.



20

Mount and adjust

Attach the set under the saddle and adjust the alignment using the **grey button** on the adapter.



Transfer the program code

You've now completed assembling your senseBox:bike. The next step is to upload the program code.

a. Establish connection

Connect the senseBox:bike to your laptop using a USB-C cable and switch on the MCU S2.

b. Open removable drive

A removable drive named "senseBox" will now appear on your computer.

c. Download the program code

Download the following program code: [👉 snsbx.de/bike](https://snsbx.de/bike)

d. Transfer the program code

Transfer (copy) the code to the senseBox via drag and drop.

e. Verify the transfer

If the RGB LED lights up green, the program code has been transferred successfully.

f. Further information

For more information about data collection with the senseBox:bike and the app, please refer to the document "Installation Guide senseBox:bike".

