

Humidity sensor

The relative air humidity in a bee hive can contribute to a healthy development of brood, as it influences the ability of honey supplies/storage to dry, as well as whether Varroa mites can successfully infest the hive. Therefore data on hive humidity can be important information. Worker-bees can do little to influence humidity, however scientists have found that honey bees generally favor a relative humidity of 75% if they have to option to choose.

Technical data

- Voltage: 1.71 V - 3.6 V
- operating temperature range: 40°C ~ +85 °C
- relative humidity range: 0-100%
- accuracy 3%Rhv
- measured frequency interval: 1 Hz
- size: ca. 9,5 x 6,5 x 1 cm

List of Materials

You will need:

- 1x Sensor, e.g. BME280
- 1x 4-pronged- cable (the stranded wire should not be too thick), the length will be dependent on your hive size.
- soldering iron and tin-solder to wield the cable if you did not treat yourself to a prewired sensor
- 1x queen bee cage
- Drill with a 4 part drill-bit and some wire to secure the cable and the sensor



The BME280 does not only measure the relative air humidity. It can also measure temperature and air pressure. The BME280 is controlled over the I2C Bus or SPI.

What is the best place to position our sensor? We considered many good locations for the humidity sensor and settled on placing it in the center of the hive between two frames. The sensor should be hung up in the middle of the hive, so that it falls in the center of the space between two frames in the center of your hive. If you have an even number of frames, you can have the sensor hang in either the right or left frame closest to the center.

1 Step 1

Now that you know where the humidity sensor will go, let's get started! Grab your sensor and weld one of the cable on each of the pins. (If you have a pre-wired sensor this step obviously doesn't apply to you).

2 Step 2

Crimp a plug on or weld the other end of the cable, depending on what your setup looks like.

3 Step 3

Place the sensor in a queen bee cage and close it, so that the bees do not build all over it.

4 Step 4

Drill a hole in the side of your hive for the cable running from the humidity sensor to the FiPy.
You can also use the entrance of the hive for the cable.