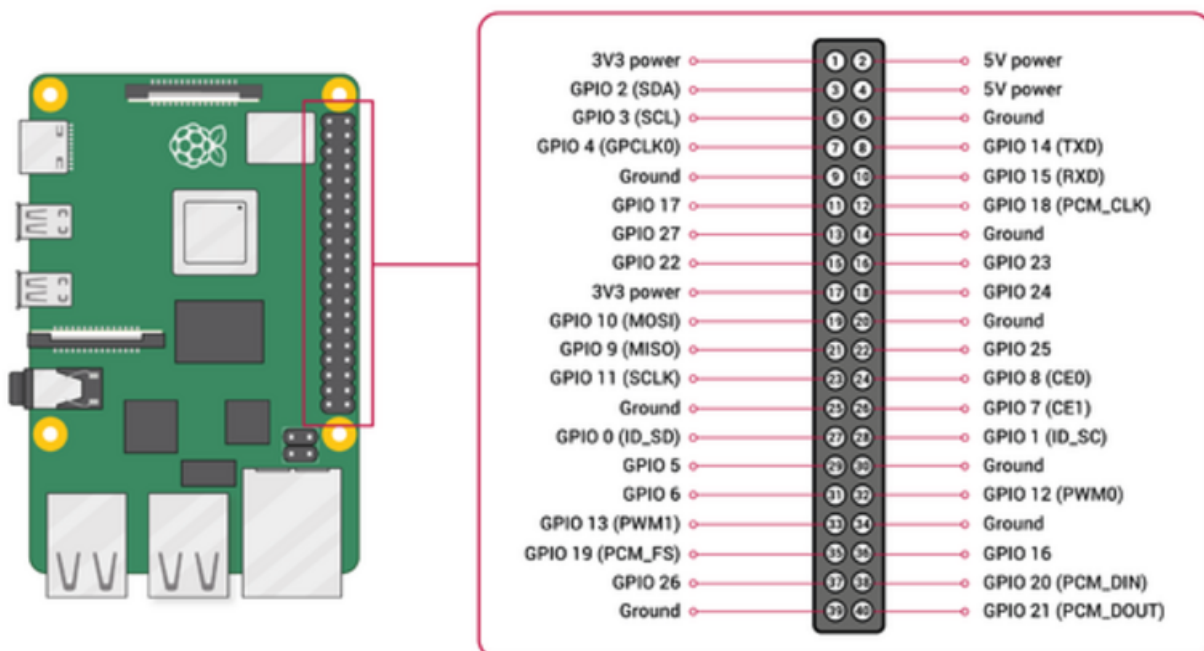


Temperature, Pressure and Humidity Monitoring with Raspberry Pi

Hardware

Besides a Raspberry Pi - in use is the Raspberry Pi 2 Model B V1.1, the datatransfer takes place over a ethernet cable, the Raspberry Pi 3 is the first one which has a build-in wireless chip - two sensors are needed. In use are the sensors [AM2302](#) for humidity and temperature and [BMP280](#) for pressure and temperature. The only difference between AM2302 and DHT22 is that one has an integrated 5,1 K Pullup-Resistor and attached cables and the other one has pins and needs an external Pullup-Resistor (around 10 K) between the dataconnection and the VCC-Pin, both cases are covered below.

First, you need to connect the sensors as following.



Raspberry Pi BMP280		
3,3 V	1 VCC	
Ground	2 GND	
SCL (GPIO 3)	3 SCL	
SDA (GPIO 2)	4 SDA	
NC	5 CSB	
NC	6 SD0	
Raspberry Pi AM2302 DHT22		
3,3 V	Red	1 VCC
Ground	Black	4 Ground
some GPIO Pin	Yellow	2 Data

This sensor works with 5 V supply voltage, too, but the sensor uses the same voltage on it's dataconnection and the Raspberry Pi can only take 3,3 V on it's GPIO pins, which is why we run the sensor with 3,3 V supply voltage. If you work with an Arduino, consider using 5 V supply voltage instead.

Software

The communication with the sensors is written in C, but there are Python-packages from Adafruit to easily integrate the communication in personal codes and applications. Here's a short overview on how to read out the sensors:

After setting up the Raspberry Pi you need to enable I2C and 1-Wire connection. Enter the command `raspi-config` and go to Interfacing Options or Advanced Options (depends on your model) and enable I2C and 1-Wire. Reboot afterwards. Next you need to install some packages using the following commands: `sudo apt install -y python3-smbus i2c-tools` `sudo apt-get install build-essential python-dev python-openssl git-core`

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