Wireless thermometer BMP280 and NodeMCU V3

Date: 06.04.2021

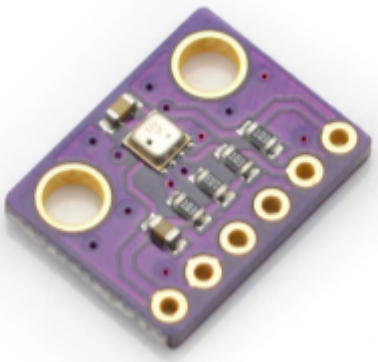
1. Purpose

To have a small component to measure the temperature and wirelessly send this sample to the server.

2. Used components

- NodeMCU V3 with ESP8266
- BMP280 Temperature and pressure sensor
- Micro USB Cable
- Jumper wires

NodeMCU V3 ESP8266



BMP280

3. Used technologies

- C++ - source code for microcontroller for communicating with sensor and with server

4. Short description of operation

NodeMCU is programmed via Arduino IDE and then connected with a BMP280 sensor with jumper wires. Microcontroller communicates with the sensor by using the I2C protocol.

At the beginning (in *setup* method) microcontroller tries to establish connection with WiFi network, whose credentials are hardcoded in source code. After successful connection, NodeMCU reads the sensor readings (temperature, pressure) once every 10 seconds.

After reading data from the sensor, the microcontroller tries to send it in proper JSON form as a POST request to the server, whose address and endpoint are hardcoded in source code.

Microcontroller also sends a *heartbeat* call (POST, hardcoded endpoint) to the server once every 30 seconds, which contains device name and time since microcontroller start. This data is used at the server side for monitoring purposes.

5. Images

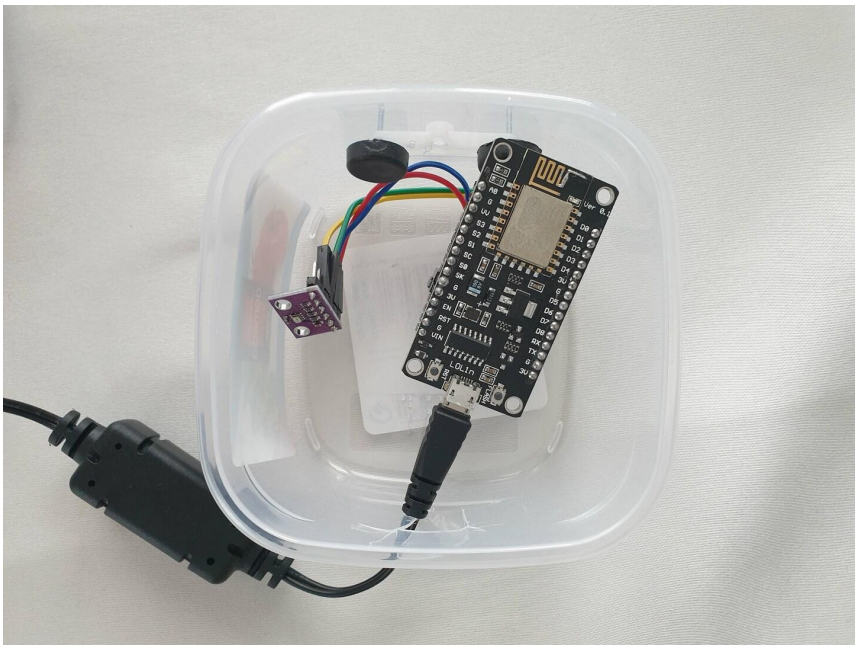


Image 1. BMP280 wired to NodeMCU V3 in opened plastic box

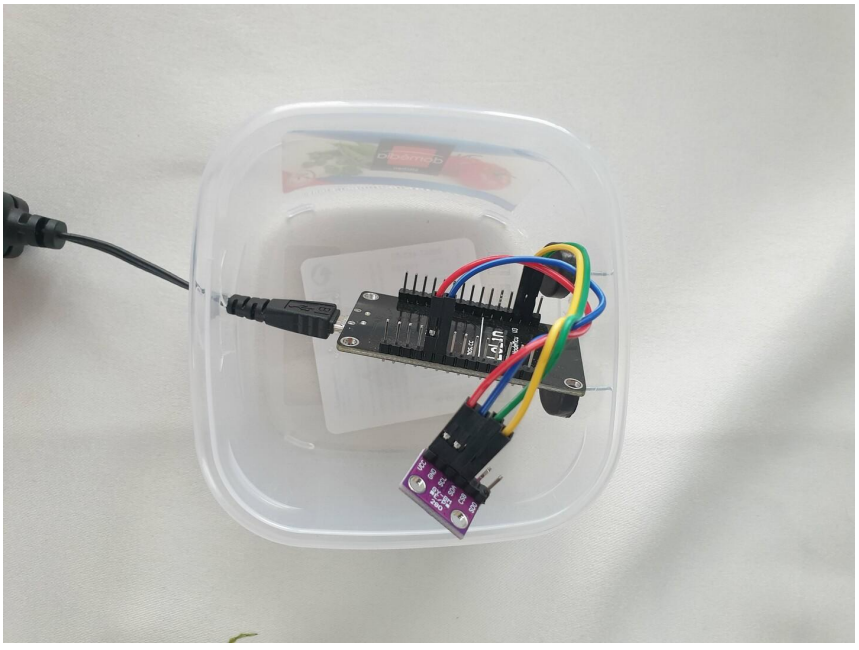


Image 2. BMP280 wired to NodeMCU V3 in opened plastic box

Image 3. BMP280 wired to NodeMCU V3 in closed plastic box - node ready to use

6. Source code

The source code can be found at this link:

https://github.com/black-fluffy-cat/SmartHouse_ArduinoCodes/blob/main/Codes/sketch_jan23a_bmp280_nodemcu/sketch_jan23a_bmp280_nodemcu.ino