Sensor Documentation

This document provides details about the sensors used in the Environmental Sensor Project with ESP32.

DHT11 - Temperature & Humidity Sensor

Overview

The **DHT11** is a basic digital temperature and humidity sensor.

- **Operating Voltage**: 3.3V - 5V

- **Temperature Range**: 0°C to 50°C

- **Humidity Range**: 20% to 90% RH

- **Accuracy**: ±2°C (temperature), ±5% RH (humidity)

How It Works

- The sensor uses a capacitive humidity sensor and a thermistor to measure air conditions.

- It sends digital output through a single data pin.

Wiring with ESP32

DHT11 Pin ESP32 Pin

DHT11 Pin	ESP32 Pin
VCC	3.3V
GND	GND
DATA	GPIO12

BMP280 - Pressure & Altitude Sensor

Overview

The **BMP280** is a high-precision barometric pressure sensor that can also estimate altitude.

- **Operating Voltage**: 3.3V

- **Pressure Range**: 300 to 1100 hPa

- **Altitude Resolution**: ±1m

How It Works

- Measures atmospheric pressure using a piezo-resistive sensor.

- Converts pressure into altitude based on sea level pressure (1013.25 hPa).

Wiring with ESP32 (I2C Mode)

BMP280 Pin ESP32 Pin

BMP280 Pin	ESP32 Pin
VCC	3.3V
GND	GND
SCL	GPIO22
SDA	GPIO21

This document serves as a reference for understanding and integrating these sensors into the project.