

# DeCent pH Sensor Calibration

## Step 1: Initial Setup

### 1. Upload the Code:

1. Upload the **main.ino** sketch to the ESP32.
2. Open the serial monitor and select a baud rate of 115200.
3. Once the system initializes successfully, the sensor values will update every 3 seconds on the serial monitor.

```
pH 1: 15.45 | pH 2: 15.45 | CO2 1: 0 PPM | CO2 2: 0 PPM | H2: 0 % | O2: 0.00 % | Temperature: -1000.00 C | Methane: 0 % | Water Pressure 1: -120.55 | Water Pressure 2: 205.83
pH 1: 13.58 | pH 2: 13.58 | CO2 1: 0 PPM | CO2 2: 0 PPM | H2: 48 % | O2: 0.00 % | Temperature: -1000.00 C | Methane: 0 % | Water Pressure 1: -120.75 | Water Pressure 2: -120.75
pH 1: 15.45 | pH 2: 15.45 | CO2 1: 0 PPM | CO2 2: 0 PPM | H2: 0 % | O2: 0.00 % | Temperature: -1000.00 C | Methane: 0 % | Water Pressure 1: -72.40 | Water Pressure 2: 120.20
```

## Step 2: Calibration Process

### 1. Enter Calibration Mode:

1. To begin the calibration process, type **calibration** on the serial monitor.
2. You will see a message confirming that you have entered calibration mode.

```
pH 1: 15.45 | pH 2: 15.45 | CO2 1: 0 PPM | CO2 2: 0 PPM | H2: 0 % | O2: 0.00 % | Temperature: -1000.00 C | Methane: 0 %
pH 1: 15.45 | pH 2: 15.45 | CO2 1: 0 PPM | CO2 2: 0 PPM | H2: 0 % | O2: 0.00 % | Temperature: -1000.00 C | Methane: 0 %
Calibration mode started. Enter the calibration command...
```

### 2. Calibrate Sensor 1:

1. Choose the sensor you wish to calibrate. To calibrate sensor 1, follow these steps:
2. Type **enterph1** on the serial monitor. You will receive a prompt to change the buffer solution.

```
pH 1: 15.45 | pH 2: 15.45 | CO2 1: 0 PPM | CO2 2: 0 PPM | H2: 0 % | O2: 0.00 %
pH 1: 15.45 | pH 2: 15.45 | CO2 1: 0 PPM | CO2 2: 0 PPM | H2: 0 % | O2: 0.00 %
Calibration mode started. Enter the calibration command...

>>>Enter PH Calibration Mode<<<
>>>Please put the probe into the 4.0 or 7.0 standard buffer solution<<<

Calibration Status: 1
```

3. Change the buffer solution as instructed.
4. Type **calph1** to start the calibration for sensor 1.
5. Once calibration is complete, type **exitph1** to exit the calibration mode.
6. Wait a few seconds for the ESP32 to start reading the sensor values.

### 3. Calibrate Sensor 2:

1. To calibrate sensor 2, repeat the calibration process:
2. Type **calibration** on the serial monitor to re-enter calibration mode.
3. Type **enterph2**, then change the buffer solution when prompted.
4. Type **calph2** to start the calibration for sensor 2.
5. Type **exitph2** to exit the calibration mode.
6. Wait a few seconds for the ESP32 to start reading the sensor values.

By following these steps, you will successfully calibrate your pH sensors. Repeat the process for any additional sensors as needed.