

# Milestone 2: ESP-IDF 32 Sensor Reading and Server Communication

Adam Damreh

University of North Carolina at Charlotte

**Abstract—** This document showcases the initial application of the ESP-IDF 32 board through sensor use and additional communication to a server.

## I. INTRODUCTION

In order to utilize the ADR server an understanding of the ESP board is needed. For this project, a ESP32-WROOM-32 board is utilized, with an AHT10 sensor, RGB screen, and UART communication. For the purpose of this milestone, we are utilizing the AHT10 humidity and temperature sensor, and then communicating that information to an https server.

## II. INITIAL SENSOR READINGS

After connecting the board via Arduino IDE, necessary libraries and dependencies were installed to make sure the board works properly. Included is the initial code and output from the serial monitor to confirm the success of reading from the AHT10 sensor

```
#include <Wire.h>
#include <Adafruit_AHTX0.h>

Adafruit_AHTX0 aht;

void setup() {
  Serial.begin(115200);
  Serial.println("Testing AHT Sensor...");

  Wire.begin(27, 33); // SDA = IO27, SCL = IO33

  if (!aht.begin()) {
    Serial.println("AHT sensor not found! Check wiring.");
    while (1);
  }

  void loop() {
    sensors_event_t humidity, temp;
    aht.getEvent(&humidity, &temp);

    Serial.printf("Temperature: %.2f °C, Humidity: %.2f %%\n", temp.temperature, humidity.relative_humidity);

    delay(2000);
  }
```

```
Temperature: 27.43 °C, Humidity: 36.88 %
Temperature: 27.41 °C, Humidity: 36.89 %
Temperature: 27.40 °C, Humidity: 36.85 %
Temperature: 27.39 °C, Humidity: 36.84 %
Temperature: 27.41 °C, Humidity: 36.87 %
Temperature: 27.40 °C, Humidity: 36.87 %
Temperature: 27.39 °C, Humidity: 36.84 %
Temperature: 27.40 °C, Humidity: 36.84 %
```

## III. SERVER IMPLEMENTATION

After confirming the output of the sensor, the data must then be communicated via an https server. Here is the result:

```
Temperature: 28.45 °C, Humidity: 35.87 %
Temperature: 28.47 °C, Humidity: 35.86 %
Temperature: 28.47 °C, Humidity: 35.85 %
Temperature: 28.39 °C, Humidity: 35.99 %
Temperature: 28.45 °C, Humidity: 35.83 %
Temperature: 28.46 °C, Humidity: 35.88 %
```



## ESP32 AHT10 Server

Temperature: 28.70 °C

Humidity: 35.94 %

## IV. CONCLUSION

In conclusion, the board was able to properly communicate with the initialized server and update to display temperature and humidity.

## REFERENCES

- [1] "ESP32 DHT Web Server Project" Youtube, Uploaded by DIYTechRush, 16 December 2022, [https://www.youtube.com/watch?v=\\_GohoygyCNE](https://www.youtube.com/watch?v=_GohoygyCNE)