



IOT BASED HUMIDITY CONTROL (HUMIDIFIER)

Embedded System

Instructor: Muhammad Haroon Waseem

Submitted By: Afra Sadat [02], Raifa Khalid [24], Laiba Kanwal [14],
Fatima Shahzadi [12]

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HUMIDIFIER

This project is designed to create a smart and connected system that enables remote monitoring and control of the humidity levels within a given environment. The IoT-based Humidity Control System operates by utilizing ESP module along with various interconnected components.

WORKING:

The DHT11/DHT22 Temperature & Humidity sensor continuously measures the ambient conditions, while the OLED Display Module provides real-time feedback on temperature and humidity. The Wi-Fi module (e.g., ESP8266 or ESP32), integrated into the system, enables IoT capabilities and provides connection to the internet. The relay module connected to ESP board activates, which controls the Atomization Humidifier based on predefined humidity thresholds. The DC charger supplies power to the entire system, ensuring its functionality. The Wi-Fi connectivity further facilitates remote monitoring and control, offering users the ability to access real-time data and adjust humidity levels remotely. The project thus seamlessly combines sensor data, and IoT technology to automate and optimize humidity control in the environment.

COMPONENTS

1. DV 5V, 300 mA, 2W, 108KHz Atomization humidifier

Purpose: Generates mist for humidification.

Reason: The atomization humidifier is used to atomize water in order to create a thin mist. It meets the project's requirements for humidification, and its specifications (5V, 300mA, 2W, 108KHz) guarantee system compatibility.

2. Breadboard

Purpose: Provides a platform for prototyping and connecting electronic components.

Reason: Connection of various components is needed in this project due to which breadboard is required to reduce complexity of connections.

3. Jumper wires

Purpose: Establishes electrical connections between components on the breadboard.

Reason: To establish the electrical connections on the breadboard, jumper wires are required. They allow for a flexible and temporary setup during the prototyping phase, enabling easy adjustments and modifications to the circuit.

4. DHT11 Temperature & Humidity sensor

Purpose: Measures ambient temperature and humidity.

Reason: The DHT11 sensor is chosen for its simplicity, cost-effectiveness, and ease of use with Arduino. It provides accurate readings of temperature and humidity, which are crucial for the humidity control system to make informed decisions about humidifier operation.

5. MB-102 3.3V/5V Power module

Purpose: Regulates and distributes power to components on the breadboard.

Reason: The MB-102 power module helps ensure a stable and regulated power supply to the components on the breadboard. It supports both 3.3V and 5V, making it compatible with various components in the project.

6. 5V relay module

Purpose: Controls the power supply to the humidifier.

Reason: The Arduino can regulate the power supply to the humidifier since the relay module functions as a switch. It is an essential part of the automated humidity management system that activates and deactivates the humidifier according to the humidity sensor's readings.

7. 1.3 inch 128 x 64 I2C OLED Display Module

Purpose: Displays real-time humidity and temperature data.

Reason: Users may visually monitor the temperature and humidity levels with the help of the OLED display module. Its compact size and I2C interface make it convenient for integration into the project, offering a clear and readable display.

8. Communication Wi-Fi Module ESP32866

Purpose: Enables wireless connectivity for the humidity control system, allowing it to connect to the internet and facilitate IoT capabilities.

Reason: The ESP8266 NodeMCU is chosen for its affordable Wi-Fi connectivity, making it ideal for IoT projects that require wireless communication and remote control capabilities.

BOM:

Serial no	Part/Components name	Part/Components description	Quantity	Cost
1	DV 5V, 300 mA,2W, 108KHz	Atomization humidifier	1	PKR.942
2	1.3 inch 128 x 64 I2C OLED	Display Module	1	PKR.860
3	DHT11	Temperature & Humidity sensor	1	PKR.250
4	MB-102 3.3V/5V	Power module	1	PKR.190
5	5V	Relay module	1	PKR.190
6	ESP8266	Wifi Module	1	PKR.750
7	-	Breadboard	1	PKR.250
8	-	Jumper wires	1 (bundle)	PKR.200

Total bill: PKR. 3,632

BLOCK DIAGRAM

