

AQI MONITORING SYSTEM

Project using :

- **ESP32**
- **PM Sensor**

Components Required

- **ESP32**
- **PM Sensor**
- **2 Channel Relay Module**
- **0 PCB Mount**
- **LM 7805 Voltage Regulator**
- **LM 7812 Voltage Regulator**
- **TFT Display**
- **Buzzer**
- **LED**

Working and Principle

Sensor :- PM2.5

- ❖ A PM2.5 sensor is used in an air monitoring project with ESP32 to measure fine particulate matter in the air — particles with diameter ≤ 2.5 micrometers.
- ❖ These particles are dangerous because they penetrate deep into the lungs and even enter the bloodstream.

Transformer

A step-down transformer is an electrical device that reduces voltage from a higher level to a lower level while keeping power approximately constant (minus losses). It is widely used in power distribution and electronic devices.

2 ch Relay module

A **2-channel relay module** is an electronic board containing **two electromechanical relays** that let a microcontroller switch **high-voltage or high-current loads** (AC mains, pumps, fans, etc.) using **low-voltage logic signals**.

Zero PCB Mount

Zero PCB” generally refers to **circuit construction without a fabricated printed circuit board**. Instead of using etched copper traces on a PCB, components are connected directly using alternative methods.

LM7805 voltage regulator

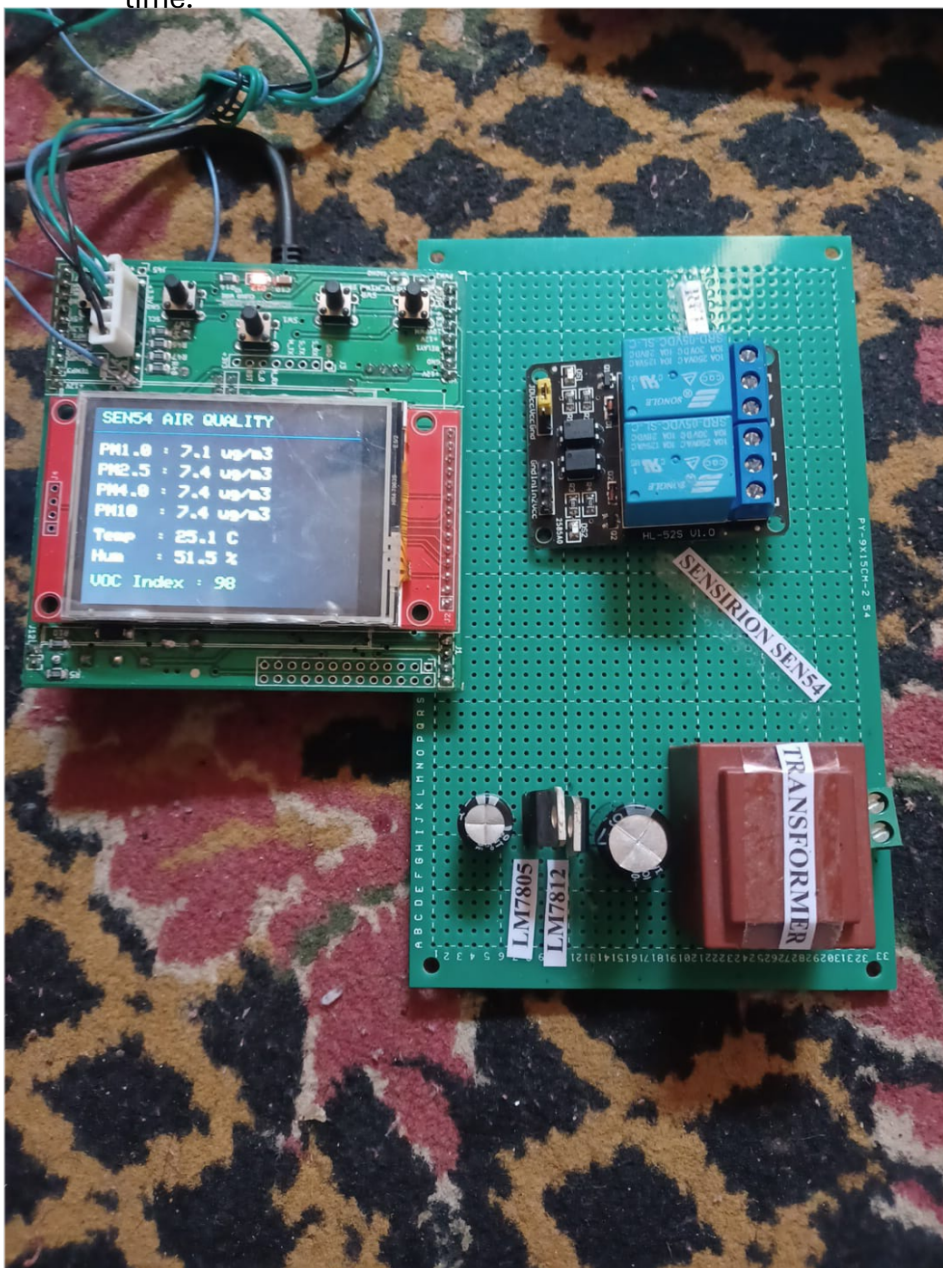
The **LM7805** is a **linear voltage regulator** that provides a stable **+5V DC output** from a higher DC input voltage.

LM7812 voltage regulator

The **LM7812** is a fixed **+12V linear voltage regulator** commonly used to provide a stable 12V output from a higher DC input. In an **Air Quality Index (AQI) monitoring project**,

TFT Display

A TFT display (Thin-Film Transistor display) is a type of LCD (Liquid Crystal Display) that uses thin-film transistor technology to improve image quality, color accuracy, and response time.



Real -World Application

Industry monitoring

Schools and Hospitals

Personal Monitoring

Future Improvement

IOT-Based Smart Monitoring Network

Joint fans and Alarm

