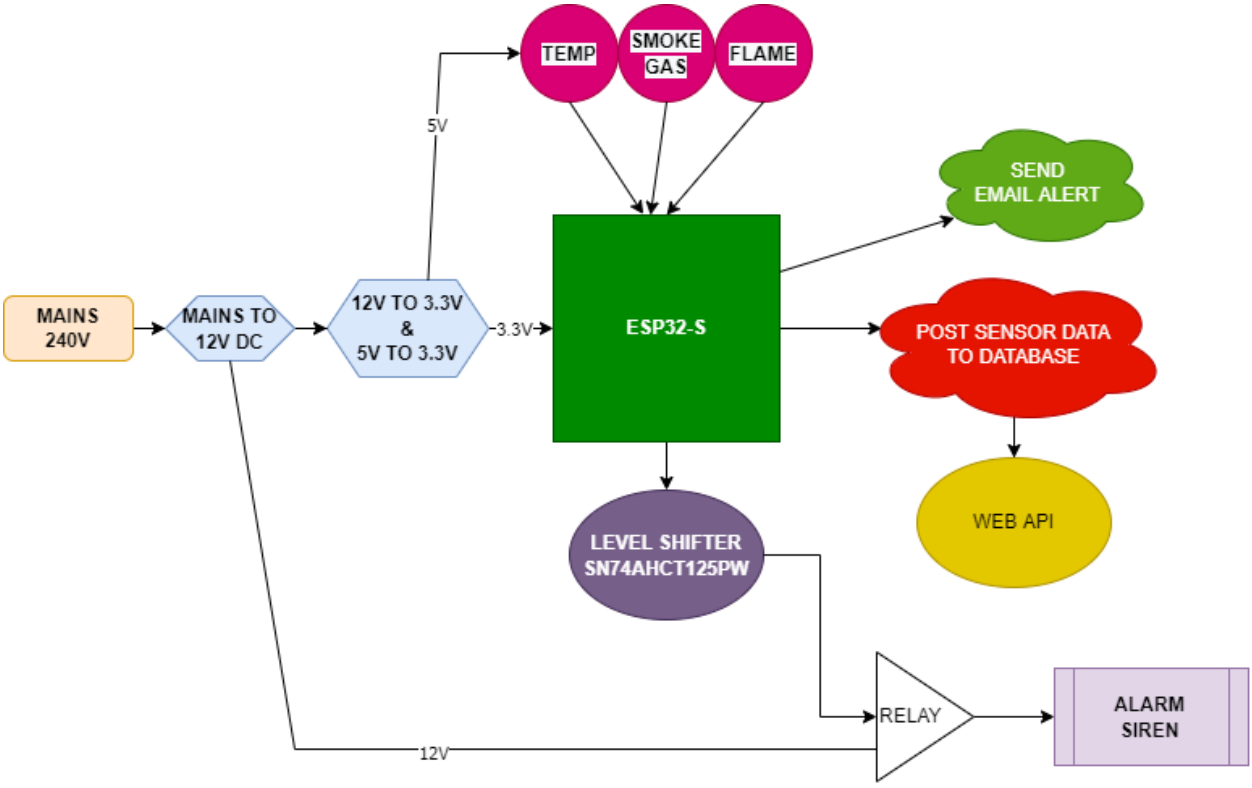
FIRE PREVENTION AND ALARM SYSTEM

Design Document

Function Summary:

- Connects using WIFI to the Firebase real-time database.
- Post sensor data to the database periodically.
- Sounds alarm when fire is detected.
- Sends email to user when fire is detected.

Flow Diagram



Microcontroller

ESP32-S: recommended for new designs.

It is enabled and has antenna already onboard.

It is cheap and is easy to program.

Flashed with Arduino C++.

Power and Power Management

Main input is 240V AC.

A 240V AC to 12V LDO SMPS PCB module supplies 12V to the board and siren.

A 12V to 5V LDO voltage regulator supplies 5V to the sensors.

A 5V to 3.3V LDO voltage regulator supplies 3.3V to the ESP32 and sensors.

PCB

Size: 10.8cm x 6.7 cm.

A 2-layer board.

WEB API

Coded using Flutter Web and Firebase integrations.