

# Gas & Oil IOT Project – Hardware and Connections

## ☒ Hardware Components

1.  
ESP32 Development Board
2.  
MQ-2/MQ-4 Gas Sensor
3.  
Flux Rate Sensor
4.  
OLED/LED Display (optional)
5.  
Buzzer Module
6.  
Relay Module (for controlling gas valves)
7.  
Connecting Wires and Breadboard
8.  
Power Supply (5V DC)

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## ☒ Wiring Connections

### Gas Sensor (MQ Series):

- VCC ☒ 3.3V on ESP32

- GND → GND on ESP32
- A0/D0 → GPIO34 or any analog/digital pin

## Flux Rate Sensor:

- VCC → 5V on ESP32
- GND → GND
- Signal → GPIO25

## Buzzer:

- VCC → 3.3V or 5V
- GND → GND
- Signal → GPIO26

## Relay Module:

- VCC → 5V
- GND → GND

- IN1 ↔ GPIO27

## OLED Display (I2C - Optional):

- VCC ↔ 3.3V
  - GND ↔ GND
  - SDA ↔ GPIO21
  - SCL ↔ GPIO22
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## ↗ Recommended Pin Mapping (ESP32)

Component	Pin Used
Gas Sensor	GPIO34
Flux Sensor	GPIO25
Buzzer	GPIO26
Relay Module	GPIO27
OLED SDA	GPIO21
OLED SCL	GPIO22

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## ⌘ Power Supply Considerations

- Use a **stable 5V 2A** power source for reliable operation.
- If using a battery, ensure it supports peak current requirements.
- Use **level shifters** for 5V sensors/modules if needed.
- For long-term use, use a **regulated power adapter** or power bank.