

## Understanding the MQ-4 Sensor and its Components

The MQ-4 sensor is a type of gas sensor that is sensitive to certain gases, such as methane.<sup>1</sup> It works by changing its electrical resistance when exposed to these gases.

### The Power LED:

The power LED is always on because it indicates that the sensor is receiving power. This LED is typically connected directly to the power supply, so it will always be on as long as the sensor is powered.

### The D0 LED:

The D0 LED is controlled by the sensor's output. When the sensor detects a certain level of gas, it sends a signal to the D0 LED, which then turns on. The potentiometer is used to adjust the sensitivity of the sensor.<sup>2</sup> By turning the potentiometer, you can change the threshold at which the sensor triggers the D0 LED.<sup>3</sup>

### Threshold:

The threshold is the minimum level of gas that needs to be present for the sensor to trigger. By adjusting the potentiometer, you can change this threshold.<sup>4</sup> A higher threshold means the sensor will only trigger for higher concentrations of gas, while a lower threshold means it will trigger for lower concentrations.

### How it Works:

1. **Power On:** The power LED turns on to indicate that the sensor is receiving power.
2. **Gas Detection:** The sensor constantly monitors the air for gas.
3. **Threshold Comparison:** The sensor compares the detected gas level to the set threshold.
4. **LED Activation:** If the gas level exceeds the threshold, the sensor sends a signal to the D0 LED, turning it on.
5. **Potentiometer Adjustment:** By turning the potentiometer, you can adjust the sensitivity of the sensor, effectively changing the threshold.<sup>5</sup>

By understanding the components and how they work together, you can effectively use the MQ-4 sensor to detect gas and trigger alarms or other actions.