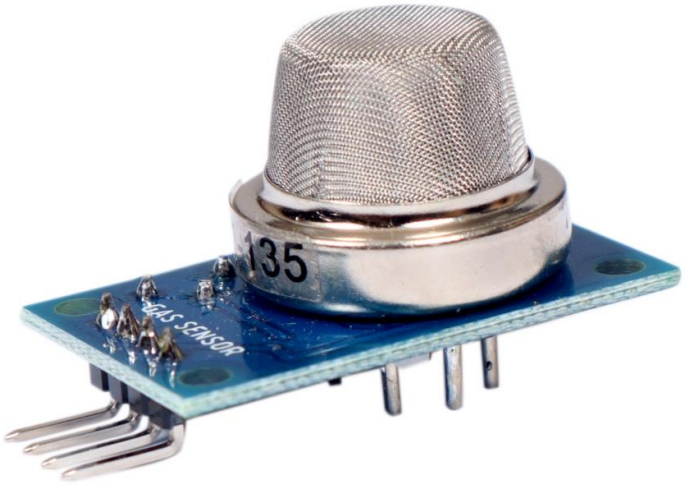
ADIY MQ-135

Air Quality Gas Sensor Module



Description:

The **MQ-135 Gas sensor** can detect gases like Ammonia (NH3), sulfur (S), Benzene (C6H6), CO2, and other harmful gases and smoke. Similar to other MQ series gas sensor, this sensor also has a digital and analog output pin. When the level of these gases go beyond a threshold limit in the air the digital pin goes high. This threshold value can be set by using the on-board potentiometer. The analog output pin, outputs an analog voltage which can be used to approximate the level of these gases in the atmosphere.

The MQ135 air quality sensor module operates at 5V and consumes around 150mA. It requires some pre-heating before it could actually give accurate results.

Features:

1. Wide detecting scope
2. Fast response and High sensitivity
3. Stable and long-life Simple drive circuit
4. Used in air quality control equipment for buildings/offices, is suitable for detecting of NH3, NOx, alcohol, Benzene, smoke, CO2, etc.
5. Size: 35mm x 22mm x 23mm (length x width x height)
6. Signal output instruction.
7. Dual signal output (analog output, and high/low digital output)
8. 0 ~ 4.2V analog output voltage, the higher the concentration the higher the voltage

Specifications:

- Operating Voltage: 2.5V to 5.0V
- Power consumption: 150mA
- Detect/Measure: NH3, Nox, CO2, Alcohol, Benzene, Smoke
- Typical operating Voltage: 5V
- Digital Output: 0V to 5V (TTL Logic) @ 5V Vcc
- Analog Output: 0-5V @ 5V Vcc

Technical details:

The MQ135 is one of the popular gas sensors from the MQ series of sensors that are commonly used in air quality control equipment. It operates from 2.5V to 5.0V and can provide both digital and analog output.

Note that all MQ sensors have to be powered up for a pre-heat duration for the sensor to warm up before it can start working.

This pre-heat time is normally between 30 seconds to a couple of minutes. When you power up the module the power LED will turn on, leave the module in this state till the pre-heat duration is completed.

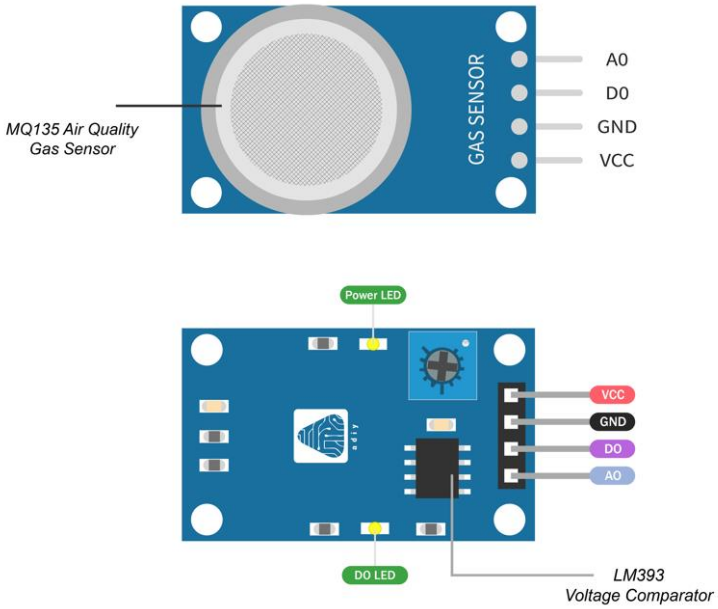
Pin Configuration:

VCC: It is used to connect 5V to the sensor.

GND: It is used to connect GND to the sensor.

DO: It is a digital output Pin. From this pin, you will get digital data HIGH/LOW.

The digital output pin of the sensor can be used to detect harmful gases in the environment. The sensitivity of the digital pin can be controlled by using the 10k potentiometer. If the gas is detected the indicator LED D0 will turn on and the digital pin will go from logic high to logic low (0V). The LM393 Op-Amp Comparator IC is used to compare the actual gas value with the value set using the potentiometer. If the actual gas value increases than the set value then the digital output pin gets low.



Because of the onboard LM393 comparator IC the MQ135 Gas sensor module can also be used without the need of an external microcontroller. Simply power up the module and set the sensitivity of the digital pin using the potentiometer, then when the module detects the gas the digital pin will go low. This digital pin can directly be used to drive a buzzer or LED with the help of simple transistors.

AO: It is analog output Pin. From this pin, you will get analog data.

The Analog output pin of the sensor can be used to measure the PPM value of the required gas. To do this we need to use an external microcontroller. The microcontroller will measure the value of analog voltage and perform some calculations to find the value of Rs/Ro where Rs is the sensor resistance when gas is present and Ro is sensor resistance at clean air.

Application:

- Used as air quality monitors.
- Used as a domestic air pollution detector.
- Used in the detection of excess or leakage of gases