

An Overview of MQ139 Sensor

Internal structure

The MQ139 alcohol sensor comprises a tin dioxide (SnO_2), a perspective layer inside aluminum oxide micro-tubes (measuring electrodes), and a heating element inside a tubular casing. There is an enclosed stainless steel net at the end face of the sensor and the backside holds the connection terminals.

Working Principle

When the Freon Halogen Gas appears at the sensitive layer of the tin dioxide, the resistance decreases. By using the external load resistance we convert the resistance variation into a suitable voltage variation.

Features and Specifications of MQ139 Sensor

Features

Dual signal output (analog output, and TTL level output);

TTL output valid signal is low; (output low signal light, which can be accessed microcontroller IO port)

Analog output increases with the concentration, the higher the concentration the higher the voltage;

An acute sensitivity and selectivity for Freon;

With a long service life and reliable stability;

Rapid response and recovery characteristics;

With mounting holes to facilitate fixed installation;

The probe can plug design for easy testing.

Specifications

Heating voltage: $5 \pm 0.2\text{V}$ (AC·DC)

Working current: 180mA

Circuit voltage: DC5V (Max DC24V)

Clean air voltage: < 1.5V

Test concentration range :10-1000ppm

Sensitivity: >3%

Response time: < 1S (3-5 minute warm-up, theory preheating time 48 hours)

Working temperature: -10 ~ 50 oC (nominal temperature 20 oC)

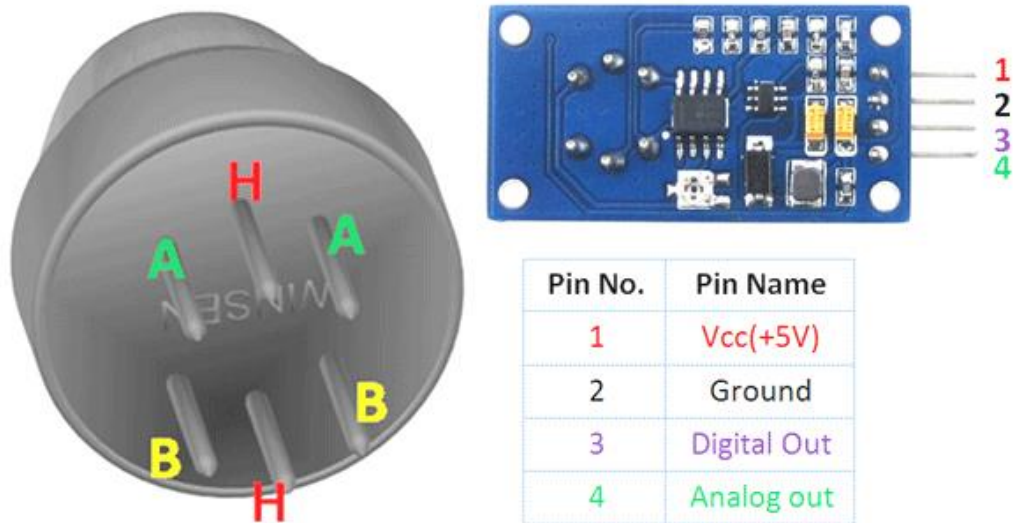
Humidity: 95% RH (nominal humidity 65% RH)

Size: 35mm×40mm×28mm

Pinouts of MQ139 Sensor

Pin Name	Description
Vcc	Power Pin requires an operating voltage of 5V.
GND	Ground pin.
DO	Digital out the pin, to get the digital output from the sensor, need to set the threshold value using Pot.
AO	Analog out the pin. It based the output of this pin on the intensity of the gas.

MQ139 Pinout



Applications of MQ139 Sensor

Freon Halogen Gas Detector

Through this system, we can immediately collect information on Freon Halogen gas, and we can also display other gases which can be processed by any microcontroller, and the results on the OLED display.

Gas Leakage Alarms for Refrigerators, Air Conditioners, etc

The objective of detecting a gas leak is to prevent the worst potential causes of the Freon Halogen gas leak, using the above type of MQ sensor. The choice of the MQ139 sensor is because of MQ139 which is suitable for detecting Freon Halogen gas.