Infrared CO2 Sensor Module

(Model: TX-Z19D)

User's Manual

(Version 1.3)

Issue Date. 2021.10.11

Taiyuan Tengxing sensor technology Co., Ltd

Statement

1.The copyright of instructions belong to Taiyuan Tengxing sensor technology Co., Ltd(hereinafter referred to as the Company), nobody is allowed to copy, translate, spread or store without written approval.

2.Thanks for using our product. In order to use the products more smoothly, reduce faults result from inappropriate using, please read the instructions carefully before using and follow the rules suggested strictly. Anyone who don't follow the instructions, disassemble or change the internal components without permission will afford the loss.

3.The color, style and size of the product is subject to the object you received.

4.The company follows the idea of scientific and technological progress, make efforts to product-improving and technology-innovating. So we have the right to improve product without prior notice.

5.Please make sure it's valid before using the instructions. Any good suggestions from you is welcomed.

6.The instructions should be well kept.

Taiyuan Tengxing sensor technology Co., Ltd

TX-Z19D NDIR CO2 Module

Profile

TX-Z19D NDIR infrared gas module is a common type, small size sensor, pins type or terminal type, using non-dispersive infrared (NDIR) principle to detect the existence of CO2 in the air, with good selectivity, non-oxygen dependent and long life. Built-in temperature compensation; and it has UART output and PWM output. It is developed by the tight integration of mature infrared absorbing gas detection technology, precision optical circuit design and superior circuit design.

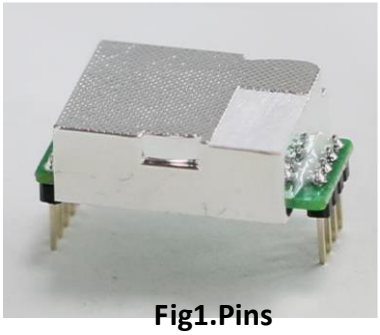


Fig1.Pins

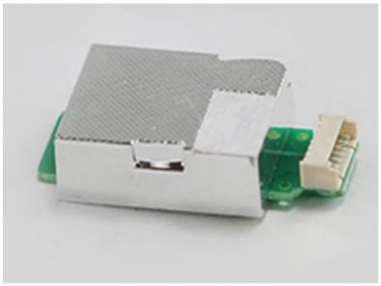


Fig2.Terminal

Applications

*Smart home
*Air cleaner device
*Indoor air quality monitoring
*Ventilation system

Main Features

*High sensitivity, low power consumption
*Good stability
*Temperature compensation, excellent linear output
*Multiple output modes: UART, PWM
*Long lifespan
*Anti-water vapor interference, anti-poisoning

Main parameters

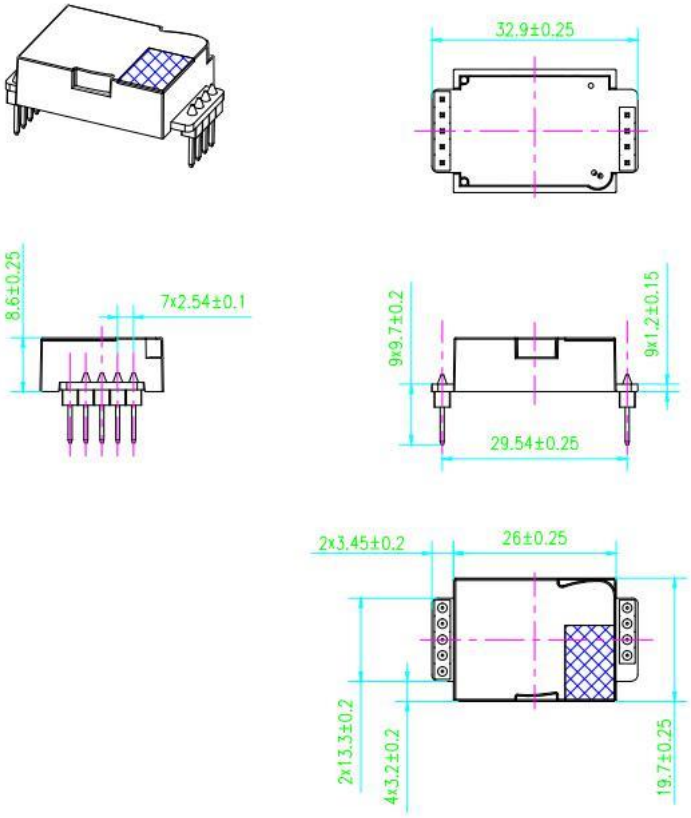
Table1.

Model No.	TX-Z19D
Detection Gas	CO2
Working voltage	5.0±0.1V DC
Average current	< 40mA (@5V power supply)
Peak current	125mA (@5V power supply)
Interface level	3.3 V (Compatible with 5V)
Detection Range	400~10000ppm(optional, see table2.)
Output signal	Serial Port (UART) (TTL level 3.3V)
	PWM
Preheat time	1 min
Response Time	T_{90} < 120 s
Working temperature	0 ~ 50 ℃
Working humidity	0 ~ 95% RH (No condensation)
Storage temperature	-20~60 ℃
Weight	5 g
Lifespan	> 5 years

Detection range and accuracy Table2.

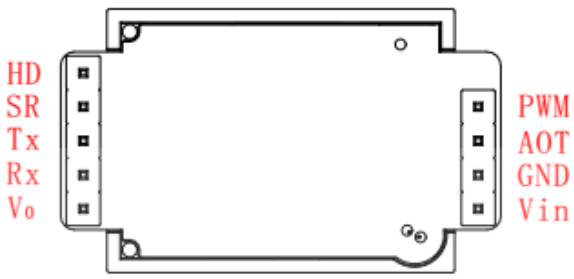
Detection Gas	Formula	Detection Range	Resolution	Accuracy
Carbon Dioxide	CO2	400~2000ppm	1ppm	± (50ppm+5% reading value)
		400~5000ppm		
		400-10000ppm		

Dimensions (Pins type)

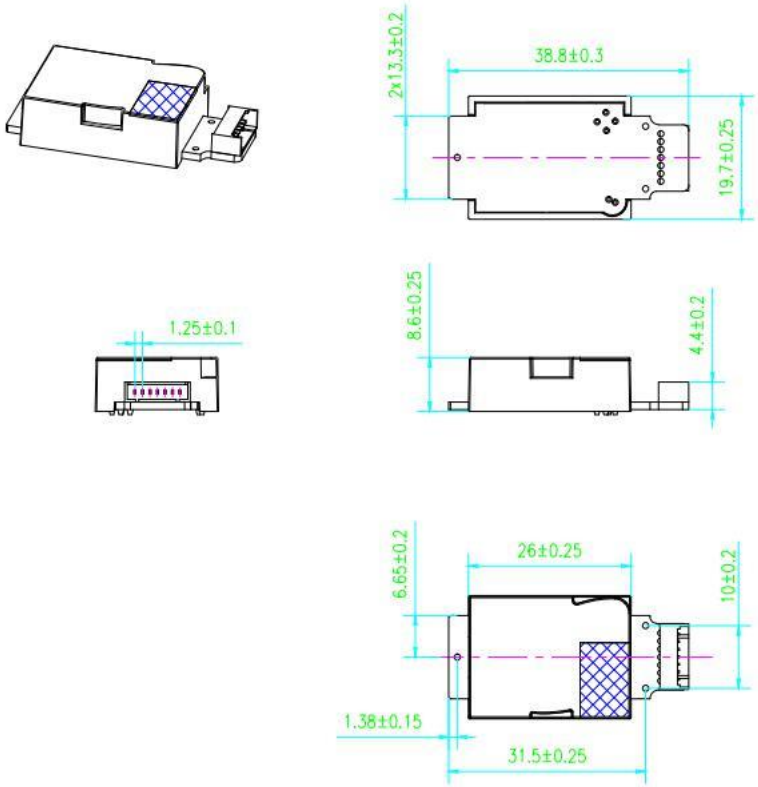


Pins connection type table3.

Pin	Pin Definition
Vin	Positive pole of power (Vin)
GND	Negative pole of power (GND)
PWM	PWM
Hd	HD(zero point calibration, low level lasting for over 7s is effective)
Rx	UART(RXD)TTL Level data input
Tx	UART(TXD)TTL Level data output

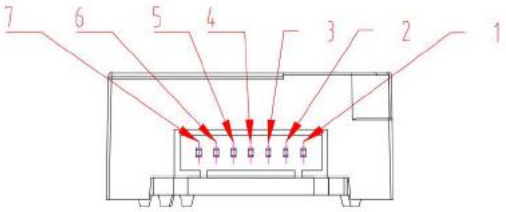


Dimensions (Terminal type)



Terminal connection type

Pin	Terminal Pin Definition
Pin 4	Vin Power In
Pin 3	GND
Pin 2	Reserved
Pin 7	PWM
Pin 1	HD(zero point calibration, low level lasting for over 7s is effective)
Pin 5	UART(RXD)TTL Level data input
Pin 6	UART(TXD)TTL Level data output



Terminal Connection Version

Cautions

- Please avoid the pressure of its optical chamber from any direction, during welding, installation, and use.
- When placed in small space, the space should be well ventilated, especially for diffusion window.
- The module should be away from heat, and avoid direct sunlight or other heat radiation.
- The module should be calibrated termly, the suggested period is no longer than 6 months.
- Do not use the sensor in the high dusty environment for long time.

- To ensure the normal work, the power supply must be among 5.0V±0.1V DC rang, the power current must be not less than 150mA. Out of this range, it will result in the failure of the sensor. (The concentration output is low, or the sensor cannot work normally.)
- During the zero-point calibration procedure by manual or sending command, the sensor must work in stable gas environment (400ppm) for over 20 minutes.
- Forbid using wave soldering for the sensor.
- When soldering with soldering iron, set the temperature to be (350±5)℃, and soldering time must be within 3 seconds.
- We suggest customers to use the way of soldering the socket and plugging/pulling the sensors for easier maintenance.