**Winsen**
**炜盛科技**

# Infrared CO2 Sensor Module

# (Model: MH-Z1311A)

## User's Manual

**(Version 1.3)**

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**Zhengzhou Winsen Electronics Technology Co., Ltd**

**ISO9001 Certificated Company**

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Please keep the manual properly, in order to get help if you have questions during the usage in the future.

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# MH-Z1311A NDIR CO2 Module

## Profile

MH-Z1311A carbon dioxide gas sensor (hereinafter referred to as the sensor) is a general-purpose, small-scale sensor that uses the principle of non-dispersive infrared (NDIR) to detect CO2 in the air. It has good selectivity, no oxygen dependence, and long life. , Built-in temperature compensation, digital output, easy to use. The sensor is a high-performance sensor made by closely combining mature infrared absorption gas detection technology with precise optical circuit design and sophisticated circuit design.
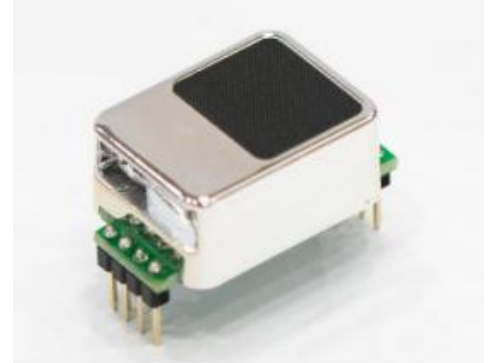
## Applications

| | | |
|---|---|---|
| *HVAC refrigeration | *Air cleaner device | *Indoor air quality monitoring |
| *Smart home | *Ventilation system | |

## Main Features

*The air chamber adopts electroplating treatment, waterproof and anti-corrosion
*High sensitivity, low power consumption
*Excellent stability
*Temperature compensation, excellent linear output
*Provide serial port (UART) output mode
*Long lifespan
*Anti-water vapor interference, anti-poisoning

## Main parameters

| | |
|---|---|
| Model No. | MH-Z1311A |
| Detection Gas | CO2 |
| Working voltage | 5.0±0.1V DC |
| Average current | <800uA (@5V power supply) |
| Peak current | 90mA (@5V power supply) |
| Interface level | 3.3 V (Compatible with 5V) |
| Detection Range | 0~10000ppm(optional) |
| Output signal | Serial Port (UART) (TTL level 3.3V) |
| Preheat time | 10s |
| Response Time | $T_{90} < 60$ s |
| Working temperature | -10 ~ 50 ℃ |
| Working humidity | 0 ~ 95% RH (No condensation) |
| Weight | 5 g |
| Lifespan | > 10 years |
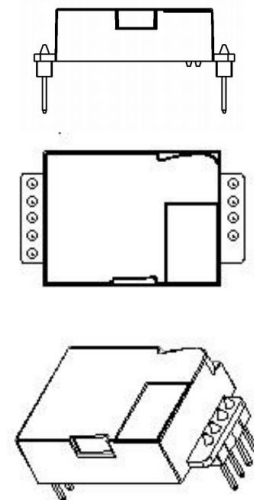
## Detection range and accuracy

| Detection Gas | Formula | Detection Range | Resolution | Accuracy |
|---|---|---|---|---|
| Carbon Dioxide | $CO_2$ | 0~2000ppm | 1ppm | $\pm$ (30ppm+3% reading value)(15~35℃) |
| | | 0~5000ppm | | $\pm$ (10% reading value)(-10~15℃，,35~50℃) |
| | | 0~10000ppm | | |

## Dimensions



進/出气窗口
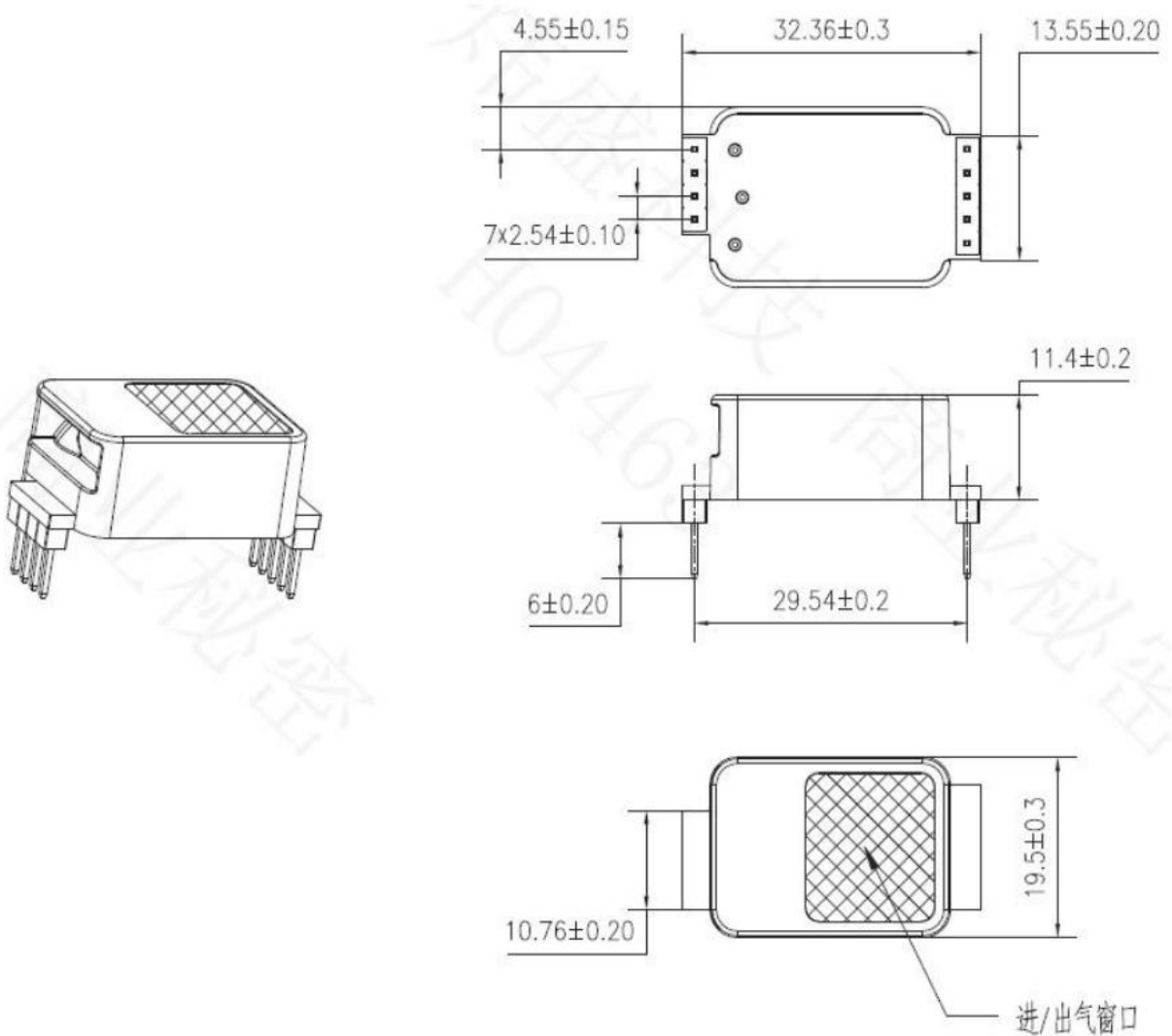
**Pins connection type:**

| Pin | Pin Definition |
|---|---|
| Pin 1,2,5-7 | Reserved |
| Pin 3 | UART（TXD） 0～3.3 V data output |
| Pin 4 | UART（TXD） 0～3.3 V data input |
| Pin 8 | GND |
| Pin 9 | VIN |
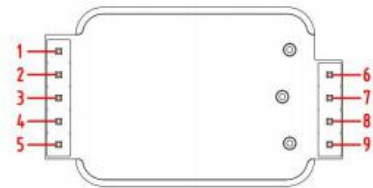


## Notes

● During the process of welding, installation, and use of the sensor, the optical cavity of the sensor should be prevented from being subjected to pressure in any direction.

● If the sensor needs to be placed in a small space, this space should be well ventilated, especially the air intake window should be in a well-ventilated location..

● The sensor should be far away from heat sources, and avoid direct sunlight or other heat radiation.

● The module should be calibrated termly, the suggested period is not longer than 6 months.

● Do not use the sensor for a long time in an environment with high dust density.

● To ensure that the sensor can work normally, the power supply voltage must be kept in the range of DC (5.0±0.1)V, and the power supply current must not be less than 150mA. If it is not within this range, the sensor may malfunction, the sensor output concentration is low or the sensor cannot normal work.

● When manually calibrating the zero point or sending a command to calibrate the zero point, you must work continuously for more than 20 minutes in a stable gas environment (400ppm).