SPECIFICATION

Carbon Dioxide (CO2) Sensor

HT8101

1. Introduction

1.1 Overview

HT8101 is a digital carbon dioxide sensor based on non-dispersive infrared absorption (NDIR) method. Using non-dispersive infrared (NDIR) method to detects the presence of CO2 in the air, with good selectivity, no oxygen dependence, and long lifetime; Built-in temperature compensation; It also has serial port output, analog output and PWM output, very convenient to use. The sensor is a high-quality sensor combining mature infrared absorption gas detection technology with precise optical circuit design and sophisticated circuit design.

1.2 Features

 ✧   IR non-dispersive the to measure carbon dioxide concentration

 ✧   Full range temperature correction

 ✧   Dual-channel design with better accuracy and stability

 ✧   Highly integrated design, convenient for user's application

 ✧   The gas chamber with gold-plated surface, it's waterproof and anti-corrosion

1.3 Potential applications

 ✧   Cold chain transportation

 ✧   Air conditioners

 ✧   Air quality monitoring equipment

 ✧   Air purifier

 ✧   Fresh air system

 ✧   Smart home

1.4 Precautions

① The gold-plated plastic cavity should not be subjected to pressure in any direction during the welding, installation, and use of the sensor.

② If the sensor needs to be placed in a small space, the space should be well ventilated. Especially the two diffusion windows should be well-ventilated.

③ Do not use the sensor for a long time in an environment with high dust density.

④ When you manually calibrate the sensor to zero point or send a command to calibrate the zero point, the sensor must work continuously for more than 20 minutes in a stable gas environment (400ppm).

⑤ The sensor should be calibrated regularly, and the calibration period is recommended to be no more than 6 months.

⑥ The sensor should be kept away from the heat and avoid direct sunlight or other heat radiation.

⑦ To keep the sensor work normally, the power supply voltage must be kept in the range of 4.5V~5.5V, and the power supply current must be no less than 150mA. If not, it may cause malfunction, the sensor output concentration is low or the sensor cannot work normally.

⑧ Wave soldering is prohibited for sensors.

⑨ When using a soldering iron to solder, the temperature setting must be (350±5) ℃, and the soldering time must be less than 3S.

2. General performance

2.1 Specification

Model No.	HT8101
Detected gas	Carbon dioxide (CO2)
Detected range	400~5000ppm
Accuracy	±(50ppm+5% reading value)
Power-on stable time	120s
Operating environment	-10~60℃; 0~95%RH (Non-condensing)
Storage environment	-20~60℃; Below 0~95%RH(Non-condensing)
Supply voltage	4.5~5.5V DC
Average operating current	＜20mA
Peak current	110mA
Output protocol	UART_TTL(3.3V) Analog output (DAC) (default 0.4~2V) (0~3V range configurable)
Preheat time	3min
Respond time	T90<30s
Lifetime	≥5years

2.2 Interface Specifications
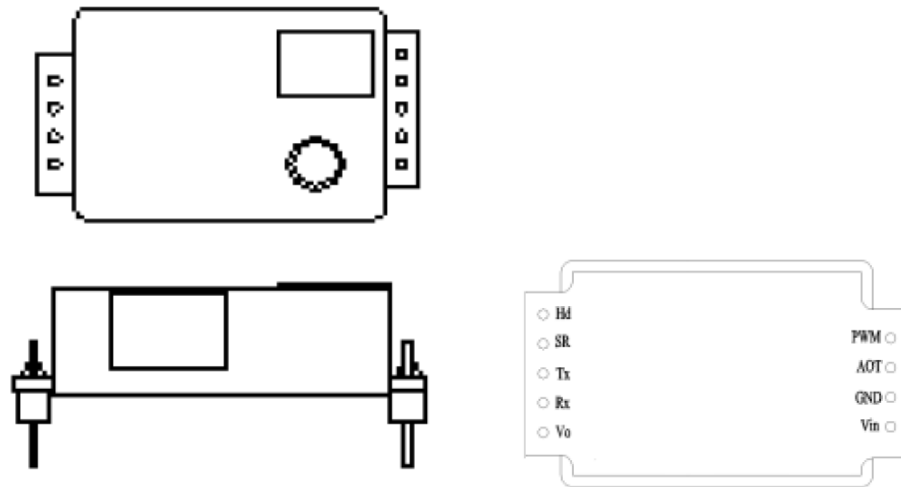
Pin Name	Description
Vin	Supply voltage (Vin)
GND	Ground (GND)
V0	Analog output
PWM	PWM
Hd	HD (Zero calibration, low level for more than 7 seconds)
Rx	UART(RXD)Receiving pin for communication TTL
Tx	UART(TXD) Transmitting pin for communication TTL
GND	Ground (GND)
V0	Analog output

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2.3 Data output

2.3.1 Data output(UART)

Set the serial port baud rate to 9600, the data bit to 8 bits, the stop bit setting bit to 1 bit, and the parity bit to none.

Protocol command interface list and meaning	
0X86	Reading gas concentration value
0X87	Zero point calibration command (ZERO)
0X88	Calibration span point (SPAN)

0x86- Reading gas concentration value								
Sending command								
Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start byte	Reserved	Command	------	-----	------	------	------	Check value
0xFF	0x01	0x86	0x00	0x00	0x00	0x00	0x00	0x79
Return value								
Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start byte	Command	8 bits higher in concentration	8 bits lower in concentration	-----	------	------	------	Check value
0xFF	0x86	HIGH	LOW	-----	------	------	------	Checksum
Gas concentration value =HIGH*256+LOW								

0x87- Zero point calibration command								
Sending command								
Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start byte	Reserved	Command	------	-----	------	------	------	Check value
0xFF	0x01	0x87	0x00	0x00	0x00	0x00	0x00	Checksum
No return value. Note: Zero point refers to 400ppm, please make sure that the sensor runs stably for more than 20 minutes under 400ppm concentration before sending the zero point calibration command.								

| 0x88- Calibration span point (SPAN)								
Sending command								
Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start byte	Reserved	Command	SPAN high 8 bits	SPAN low 8 bits				Check value
0xFF	0x01	0x88	HIG	LOW	0x00	0x00	0x00	Checksum
No return value. Example：If the SPAN value is 2000ppm, then HIGH=2000/256; LOW=2000%256 Note: Please calibrate the zero point before calibrating the SPAN value. Before sending the SPAN calibration command, please ensure that the sensor runs stably for more than 20 minutes at the corresponding concentration. It is recommended to use 2000ppm as the SPAN value for calibration. If you need to use a lower value as the span value, please choose a value above 1000ppm.								

3.Product Outline Drawings
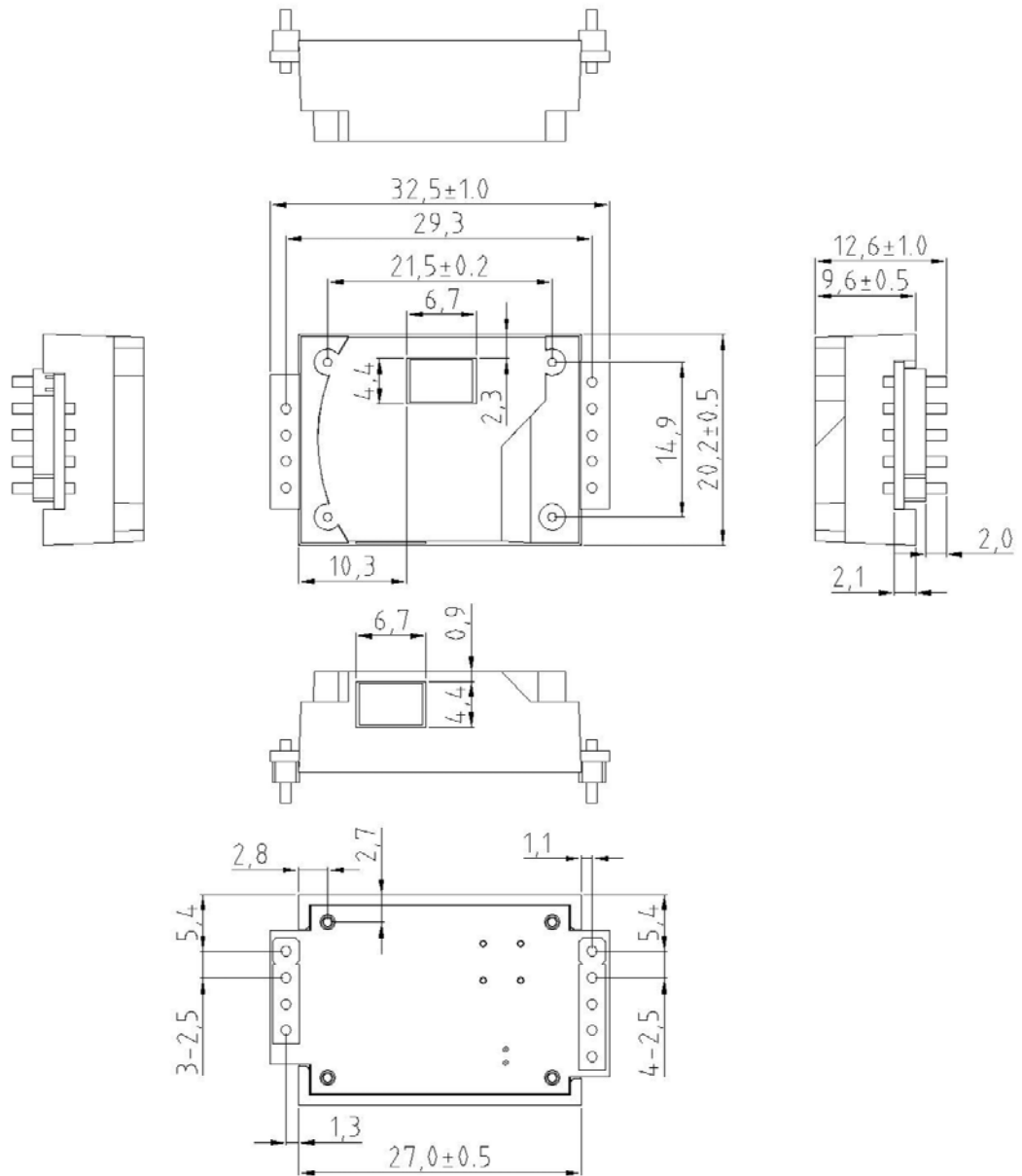
4. Shipping package

Length	Width	Height	Pallet	Qty/Pallet	Qty/Carton	Weight
320mm	302mm	195mm	12	12	144pcs	Max.3.0kg

1个纸盒

1层

2层

1层

2层

3层

1个纸盒放3层共装27PCS产品

1个纸箱放2层共装12盒324 PCS产品