HCC series infrared CO2 sensor

Features

- · CO2 concentration range: 0-5000 PPM
- · Based on NDIR infrared absorption principle
- · High precision: ±50PPM±5%
- · With multi-point temperature compensation
- · Multiple interfaces (UART/PWM/analog)
- · Response time: 120s (90%)
- · Manual instant zero function, fast automatic zero calibration
- . Accurate measurement and good consistency
- · Excellent stability and reliability
- · Support for customized needs
- · Efficient diffusion type internal smooth, infrared focusing technology, low attenuation diffuse reflection optical path technology

Product Description

HCC series CO2 sensor products are developed for many fields of application such as environmental CO2 concentration detection. They adopt natural diffusion type air intake method and single wavelength infrared absorption principle, and have remarkable characteristics of stability, reliability and high cost performance.

HCC series CO2 sensor integrates professional NDIR technology, adopts international leading high-quality infrared light source and optical sensor, and has unique measurement and temperature compensation algorithm. Compared with existing products in the market, it has better stability, small drift and temperature. Good stability and fast response time.

HCC series CO2 sensor adopts standard 5V power supply, optional digital UART, PWM signal or linear analog signal output, and has excellent anti-interference performance, which is conducive to product integration application.

HCC series CO2 sensors are available with customizable solutions upon request. Including range, output form, accuracy requirements can be customized to meet different customer needs.

Applications

Environmental protection field: environmental atmosphere detection, air purification, etc.

Home Appliances: Air Purifier, Fresh Air System

Instrumentation: Handheld or desktop air detector

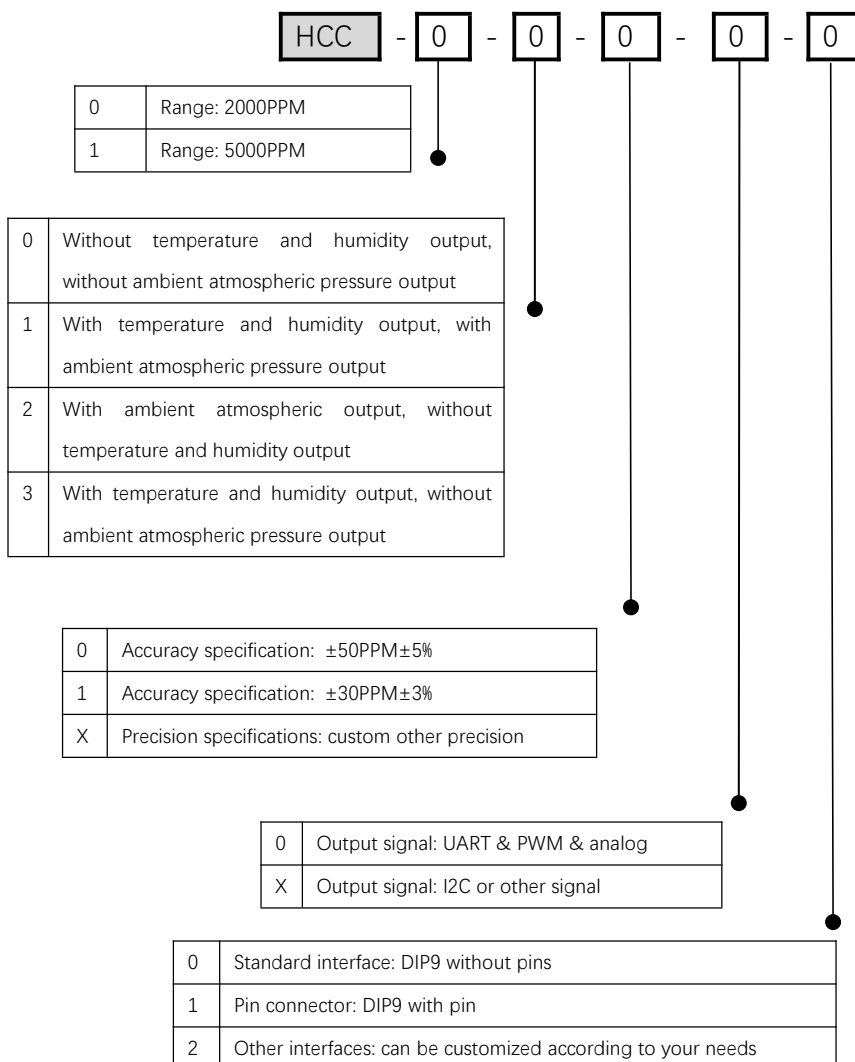Ventilation and ventilation: HVAC ventilation system

Auto: CO2 monitoring in the car

Product Performance

parameter	Specification performance	instruction manual
CO_2 measurement range	0-2000PM/0-5000PPM	Other ranges can be customized
CO_2 resolution	1PPM	/
CO_2measurement accuracy (1	±50ppm±5% of reading	Customizable and higher precision
Response time	120S	From zero to 90% full scale

Note: 1) The ambient temperature is 25 degrees, the atmospheric pressure is 101.3Kpa, the humidity is 50% RH, and the standard gas test is used.

Product Number

HCC - 0 - 0 - 0 - 0 - 0

0	Range: 2000PPM
1	Range: 5000PPM

0	Without temperature and humidity output, without ambient atmospheric pressure output
1	With temperature and humidity output, with ambient atmospheric pressure output
2	With ambient atmospheric output, without temperature and humidity output
3	With temperature and humidity output, without ambient atmospheric pressure output

0	Accuracy specification: ±50PPM±5%
1	Accuracy specification: ±30PPM±3%
X	Precision specifications: custom other precision

0	Output signal: UART & PWM & analog
X	Output signal: I2C or other signal

0	Standard interface: DIP9 without pins
1	Pin connector: DIP9 with pin
2	Other interfaces: can be customized according to your needs

Product Electrical Specifications

Power range	5V±5% DC
Power consumption	Average current 20mA, peak current 150mA
UART interface	3.3V TTL, 115200BPS, 8-bit data, 1 stop bit, no parity
PWM interface	3.3V push-pull output, 0-100% duty corresponds to 0-FSS
Analog interface	0.3V-3V corresponds to 0-FSS

Note: Please refer to the communication protocol document for detailed communication protocol.

Use and Storage Environment Requirements

range of working temperature	0 ~ 50℃
Operating humidity range	0 to 95% RH (non-condensing)
Storage temperature range	-40 ~ 70℃
Storage humidity range	0 to 100% RH (non-condensing)

Electromagnetic Compatibility

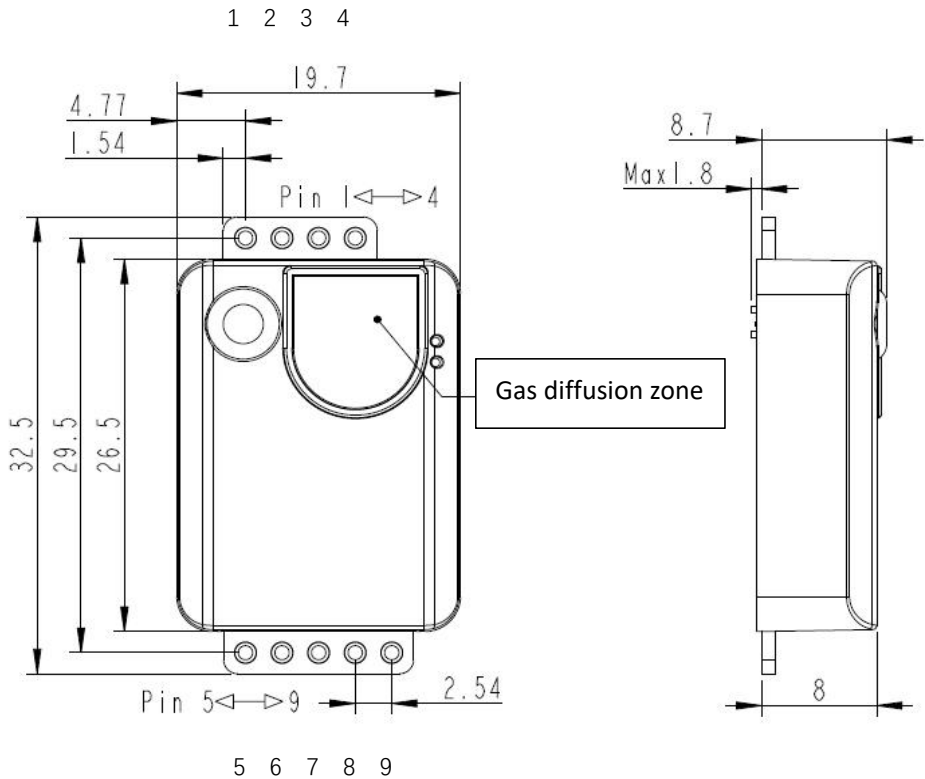|	
Radiation immunity (RS)	3V/m 80MHz ~ 2.5GHz (IEC61000-4-3 level 2)
Radiation emission (RE)	Class B (CISPR 11)
Electrostatic discharge (ESD)	6KV contact, 8KVair (IEC61000-4-2 level 3)

Electrical Interface Definition

Interface socket: 2.54mm pin (can be customized for other output connectors), the PIN pin is defined as follows:

Pin	Pin definition	Function Description
1	VCC	5V positive
2	GND	5V negative
3	Alarm	Alarm output, OC output
4	PWM	PWM output, push-pull output
5	VA	Analog output
6	RXD	Serial port reception, 3.3V TTL (compatible with 5V input)
7	TXD	Serial port transmission, 3.3V TTL
8	NC	Reserved
9	Zero	Manually zero pin, ground indicates zero

Product structure size and interface description (unit: mm)

Standard type (without pins and sockets)

1 2 3 4

19.7

4.77

1.54

Pin 1◁—▷4

32.5

29.5

26.5

8.7

Max1.8

Gas diffusion zone

Pin 5◁—▷9

2.54

8

5 6 7 8 9

Pin type (with pin, needle direction and length can be customized, the remaining dimensions are the same as standard)

1 2 3 4

A

B

5 6 7 8 9
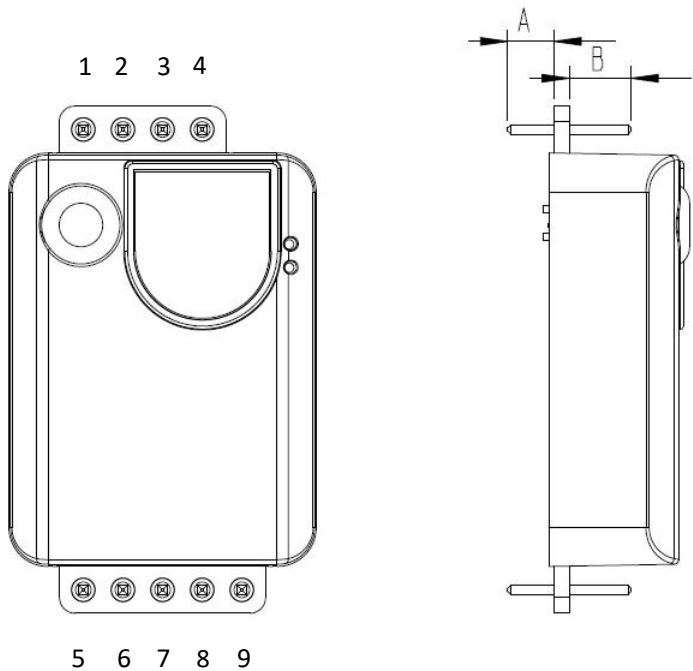
letter of Agreement

Serial port configuration

115200bps, 8 data bits, 1 stop bit, no parity. Level 3.3V TTL

Mode of operation: Each time the host sends a command packet, the CO2 module returns a packet.

Command package

Reading gas concentration

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Frame header	Reserved	command						Check value
0x5C	0x01	0xC5	0x00	0x00	0x00	0x00	0x00	DD

Data pack

Packet format:

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Baotou	BIT15-8	BIT7-0	BIT15-8	BIT7-0	BIT15-8	BIT7-0		Check value
(0x5D)	(0xXX)	(0xXX)	(0xXX)	(0xXX)	(0xXX)	(0xXX)	0x00	CHK
(0x5D)	Concentration PPM		Humidity %		Temperature °C		/	CHK

The packet has a fixed length of 9 bytes.

Baotou: Fixed to 0x5D

Data 1~7: See the subsequent data table

Checksum: Accumulate by "Data 1" ~ "Data 7" and add 1 and take a negative value.

CHK = - ("Data 1" + "Data 2" + ... + "Data 7" + 1)