Shenzhen Q&C Sensing Technology Co.,Ltd
Address: 401, Block C,Huafeng Zhihui Chuangxingang, Gushu 2nd Road,
Xixiang Street,Baoan District, Shenzhen, China 518000
Tel：+86-755-82973595 Website：http://www.qcsiot.com

Single Beam NDIR CO2 sensor QC103

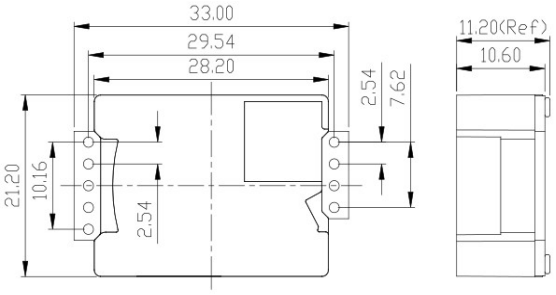
∗ Main charateristics

- ✧ Small size, convenient for installation
- ✧ Built-in automatic calibration
- ✧ Excellent long-term stability
- ✧ Various Signal output modes

∗ Target Application

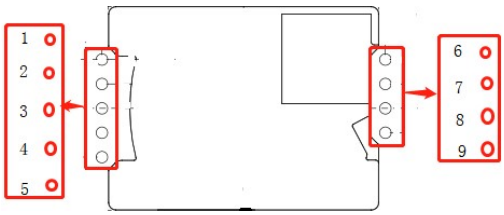
- ✧ IAQ monitor
- ✧ HVAC System
- ✧ Air Purifier
- ✧ Central Ventilation System
- ✧ Smart Home

Installation dimensions



All dimensions in millimeters(mm)

Pin definition



1	NC
2	RX (UART)/SDA (I 2RXC)
3	TX (UART)/SCL (I2C)
4	R/T (Refer to Appendix 7 for details)
5	NC
6	VIN
7	GND
8	NC
9	PWM

Specification:

Measurement range	400~5000ppm, up to 6000ppm extended range
Accuracy	±50 ppm±5% of measured value (refer to notes# 1& 2)
Response time (t90)	<120s
Pre-heating time	<5s (output values) <120s (accurate output)
Measuring cycle	4s
Temperature dependence	±5ppm/℃ or 0.5% of measured value/℃, whichever is the greater
Operating voltage	DC 4.5~5.5 V
Output signal	UART 、PWM 、I2C(customized)
Communication level	3.3 V
Average current	<30mA (5V power supply)
Operating temperature	0~50°C
Operating humidity	0~95% RH (non-condensing)
Operating pressure	700~1100 mbar
Storage temperature	-20.0~60.0°C
Dimension	33mm X 21mm X11mm (pin is not included)
Expected lifetime	>10 years
Calibration cycle	No need in-field calibration (turn on self-calibration function in normal IAQ applications)

Notes:

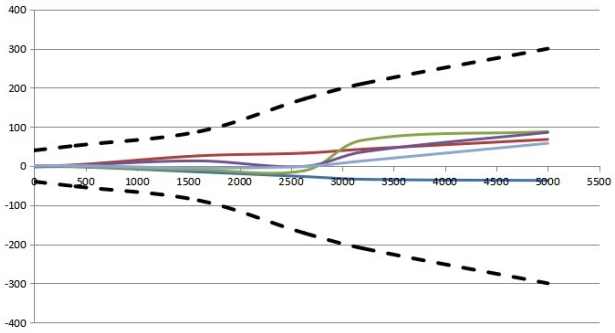
1. The accuracy is measured at 25℃ room temperature and 101.3 kpa atmospheric pressure.

2. In normal indoor air quality applications, sensor accuracy is defined under the condition of powering on the sensor for more than 3 minutes after the automatic calibration function is turned on and running continuously for three weeks.

3. Automatic calibration is based on the atmospheric CO2 concentration of 400ppm, the default automatic calibration cycle is 24 hours, calibration cycle can be customized, please refer to the communication protocol for more details.

Accuracy analysis

We chose 5pcs samples, measured the accuracy at 25℃ temperature, the data in accordance with the parameters described.



Assessment Suite

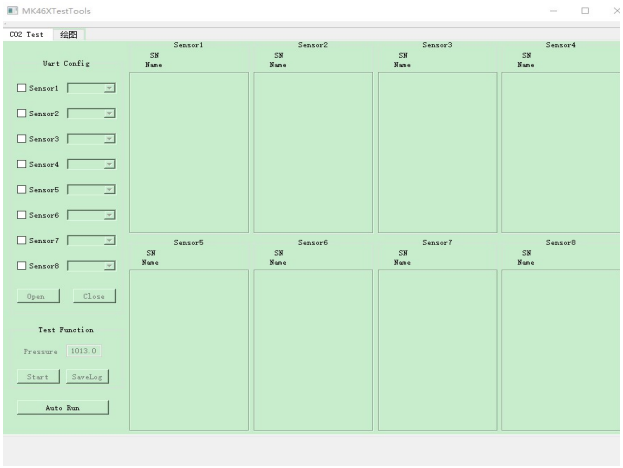
The following tool is optional which enable users to evaluate and re-calibrate the sensor.

Communication lines

Service software

With the above evaluation suite, we can provide user with the sustomized service software.

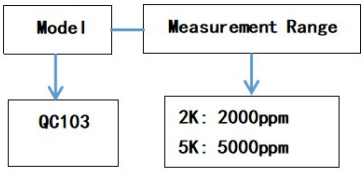
- Service software can test the performance of the sensor
- User can ucstomize some configures, such as device address, atmospheric pressure, and so on
- User can also calibrate the sensor when needed



Notes

- The shell of the sensor is not grounded, please contact manufacturer for technical support, if you have high ESD protection requirements.
- QC103 is based on non-dispersive infrared (NDIR) technology, when the light bulb is on, will need heavy current , the recommended peak current is more than 300mA.
- According to our experience, the system can recover to normal working state within 2 hours from condensation state to non-condensation state.
- The resistance to dropping & anti-vibration performance of our product is better than the similar products in the market, but in case the serious vibration or drop occurs, need re-evaluate the accuracy of the system.

Order Information



QC103-2K means measurment range of 2000ppm, default range is 5000ppm.

Appendix:

1. The accuracy (within the range of 400~5000ppm) is ±50%ppm±5% of the measured value, the test condition is DC 5V power supply, ambient temperature is 25℃, relative humidity is 40-60%, air pressure is 101. 3Kpa, the gas we used is the national standard reference material, which itself has 2% error, so the actual accuracy should be the accuracy in the specification plus the calibrating gas accuracy.

2. The actual lifetime is more than 5 years.

3. The peak current is less than 300 mA.

4. The ambient pressure for calibration is about 101.3 Kpa, and the pressure has a great influence to the sensor, which will cause the error increase about 10% of the measured value in every 10kpa of the pressure change.

5. The preheating time is about 120s, in order to reach the optimal accuracy, need at leas 10 mins.

6. The automatic calibration cycle can be modified by the user, the minimum is 24 hours. If the CO2 concentration level in the calibration environment can not recover to 400 ppm, it might result in reducing of sensor measuring accuracy.

7. The pin#4R/T is a communication switching function pin, if pin#4R/T suspension, the pin# 2 & 3 corresponding to RX、TX respectively , whereas if the SP grounding, then pin# 2 & 3 corresponding to SDA & SCL respectively. It can also be used as the RS485 control pin to connect with the chip direction control pin.