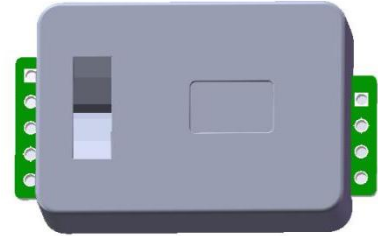


XGZG360M CO2 SENSOR Module

Single Channel Version

FEATURES

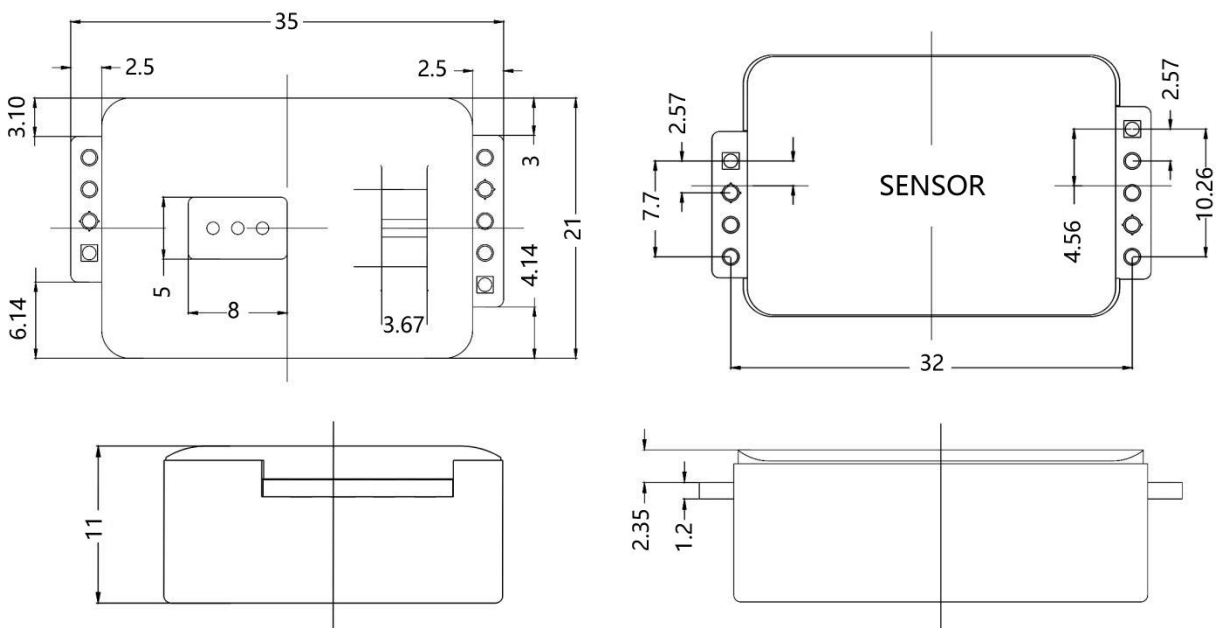
- 1) Infrared working principle
- 2) High sensitivity, low power consumption
- 3) Small size and high precision
- 4) Built-in temperature compensation
- 5) Support serial-port (UART), PWM etc output methods



APPLICATIONS

- 1) NDIR CO2 Gas detector
- 2) Indoor, outdoor air quality monitor.
- 3) HVAC System, Air conditioner etc.,
- 4) Other medical, Agricultural, IoT, Environmental protection etc. field.

SPECIFICATION(Unit:mm)

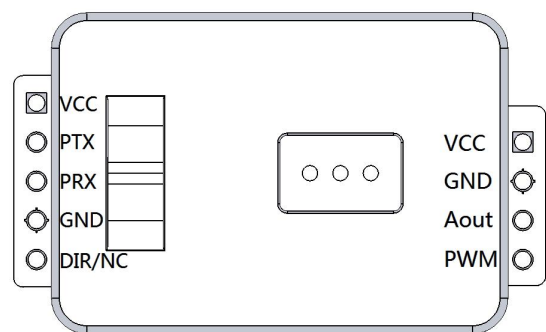


PERFORMANCE SPECS

Parameter	Value	Conditions
Measurement method	NDIR	
Measurement Interval	2S	
Measurement Span	400-5000ppm	Available to 10000ppm
Response Time	≤2ppm	90% step change
Preheat Time	≤30s	Best accuracy at 25°C after 4 minutes
Power Supply	DC 4.9-5.5V	Power ripple ≤35mV, load capacity ≥500mA, Excessive voltage may cause
Temp.coefficient	5ppm/°C or 0.5% Reading/°C	
Accuracy	±(50ppm+5% reading)	Typical value at 25°C ; ±1.6% reading error /kPa
Average Current	25mA	Approx.11mA before lighting Approx.110mA after lighting
Output Type	UART(9600/N/8/1);TTL(3-5V); PWM(custom); 0-2V(custom)	
Working Temp.	-10~50°C	Typical Value: 0-30°C
Storage Temp.	-30~70°C	No dust, no condensation, no corrosion
Storage Humidity	0-95%RH(Non-condensation)	Recommended for indoor use with ventilation
Lifespan	≥10 year	

ELECTRICAL CONNECTIONS

PIN	Definition
VCC	Power Input +
GND	Ground / Singal -
Aout	Analog output or N/C
PWM	PWM output or N/C
PTX	To PC or UART-TX of MCU
PRX	To PC or UART-RX of MCU
DIR	RS485 Extended console or N/C



Communication Command

ModBus 04 command (used in UART/TTL digital interface, default station number 01, starting address 01, Verification: CRC16)

Command example:

Send: 01(Slave Add) 04(Command) 00 01(Initial Add) 00 01(Register QTY) 60 0a(send)

Reply: 01 04 02(Byte QTY) 02 58(Value) b9 aa (where 0258=600ppm)

Calibration Method

Digital calibration (temperature compensation at the factory, calibration gas calibration) or automatic clean air calibration

Calibration Period

The digital calibration cycle is recommended to be performed once a year

The clean air self-calibration function is enabled by default when it leaves the factory, and the self-calibration cycle is about 48 hours.

Triggering Conditions

When the sensor detects a concentration drop of 200ppm or more, and the low concentration data lasts for more than ten minutes

When the concentration reduction is triggered more than once within 48 hours, select the lowest and most stable value as the 400ppm calibration

When the concentration reduction is not triggered within 48 hours, abandon the calibration and wait until the trigger condition is activated to restart the recording

Wrong Calibration

When the minimum concentration in the environment is higher than 400ppm for a long time, it may cause the sensor to be incorrectly calibrated

When the ambient temperature is unstable, there is sudden cooling and sudden heating, etc., it may cause the sensor to be incorrectly calibrated

When the ambient concentration is unstable, there are repeated decreases and increases, which may cause the sensor to be incorrectly calibrated

Precautions

- The shell is grounded, beware of short circuit, improper operation may cause damage to the power supply or module;
- The sensor is sensitive to vibration, please do not vibrate violently to avoid misalignment or even damage;
- Built-in TVS, do not use overpressure. And the sensor is sensitive to static electricity, please touch it after eliminating static electricity;
- When measuring, it is recommended to add a casing to the module to avoid disturbance of circuit sensitive components caused by frequent airflow exchange;
- There is an error in the calibration gas, and when the temperature and air pressure of the operating environment are different from the calibration, the uncertainty of the measurement will be increased;
- When there is obvious error in the sensor data, please contact the sensor with the outside clean air for more than 48 hours, or order calibration.

● Appendix

MODBUS Protocol

1. Protocol Overview

- (1) Baudrate: 9600, Data bit:8, Stop bit:1, Parity bit: None, Overflow:Null。
- (2) The data in this protocol are in hexadecimal。
- (3) [xx] is single-byte data (unsigned, 0-255); double-byte data high byte first, low byte second。

2. Serial Communication Protocol Format

Format sent by the host computer

Add	Function Code	Data 1	Data n	CRC Check
XXH	04H	XXH	XXH	XXH

3. Serial Protocol Command Number Table

No.	Function	Data
1	Check for serial information	0x04
2	Check for slave address	0x01
3	Check for the status of automatic reports	0x32
4	Check for Self-calibration period	0x46
5	Check for current concentration data	0x01
6	Check for current temperature data	0x02
7	Restore clean air to factory condition at 400ppm	0x94
8	Manual calibration of clean air 400ppm	0x90
9	Set up automatic reporting status-2Second	0x33
10	Set up automatic reporting status-4Second	0x34
11	Set up automatic reporting status-6Second	0x35
12	Set up automatic reporting status-8Second	0x36
13	Set up automatic reporting status-10Second	0x37
15	Set up automatic reporting status-Close	0x38
14	Set up self-calibration period-1Day	0x47
15	Set up self-calibration period-2Day	0x48
16	Set up self-calibration period-3Day	0x49
17	Set up self-calibration period-4Day	0x4A
18	Set up self-calibration period-5Day	0x4B
19	Set up self-calibration period-6Day	0x4C
20	Set up self-calibration period-7Day	0x4D
21	Set up self-calibration period-关闭	0x4E

【 SAFETY NOTES 】

Using these sensors products may malfunction due to external interference and surges, therefore, please confirm the performance and quality in actual use. Just in case, please make a safety design on the device (fuse, circuit breaker, such as the installation of protection circuits, multiple devices, etc.), so it would not harm life, body, property, etc even a malfunction occurs.

To prevent injuries and accidents, please be sure to observe the following items:

- The driving current and voltage should be used below the rated value.
- Please follow the terminal connection diagram for wiring. Especially for the reverse connection of the power supply, it will cause an accident due to circuit damage such as heat, smoke, fire, etc.
- In order to ensure safety, especially for important uses, please be sure to consider double safety circuit configuration.
- Do not apply pressure above the maximum applied pressure. In addition, please be careful not to mix foreign matter into the pressure medium. Otherwise, the sensor will be discarded, or the media will blow out and cause an accident.
- Be careful when fixing the product and connecting the pressure inlet. Otherwise, accidents may occur due to sensor scattering and the blowing out of the media.
- Because the sensor PIN is sharp, please be careful not to hurt your body when using it.

【 WARRANTY 】

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