

RK300-08/08H Multi-in-one Gas Sensor

User Manual



Revision Time	Reviser	Current Version	Remarks
20250821	LI	V5.0	



User Notice

Please read this manual carefully before use to ensure safe and optimal operation. Retain this manual for future reference.

Pre-Use Instructions

- Carefully review this manual and follow all operational and safety guidelines to prevent malfunctions and hazards.

Unpacking Inspection

- Upon receipt, carefully inspect the sensor device and accessories for any shipping damage.
- If damage is detected:
- Immediately notify the manufacturer and distributor.
- Retain all packaging materials for return or replacement processing.

Parts List

Item	Quantity	Remarks
Sensor	1	
Cable	1	The length depends on the order
Bracket	1	

1. Product Introduction

RK300-08 Multi-in-one Gas Sensor adopts high-precision chip for data acquisition, advanced technology of manufacturing technique and surface mount, which to ensure accurate and reliable measurement data. It has outstanding characteristics in measurement accuracy, linearity, repeatability, interoperability, consistency and other aspects. It is suitable for environmental equipment matching, integration, and most of the general environmental tests. RK300-08 with complete monitoring parameters and accurate data. The parameters can be customized according to the requirements, up to 5-6 parameters, including air temperature, air humidity, CO₂ concentration, CO concentration, PM_{1.0/2.5/10}, atmospheric pressure, formaldehyde, oxygen, ozone, volatile organic compounds, etc.

2. Product Features

- High sensitivity
- Fast response
- Long service life
- Effective resistance to water vapor
- Excellent stability

3. Specifications

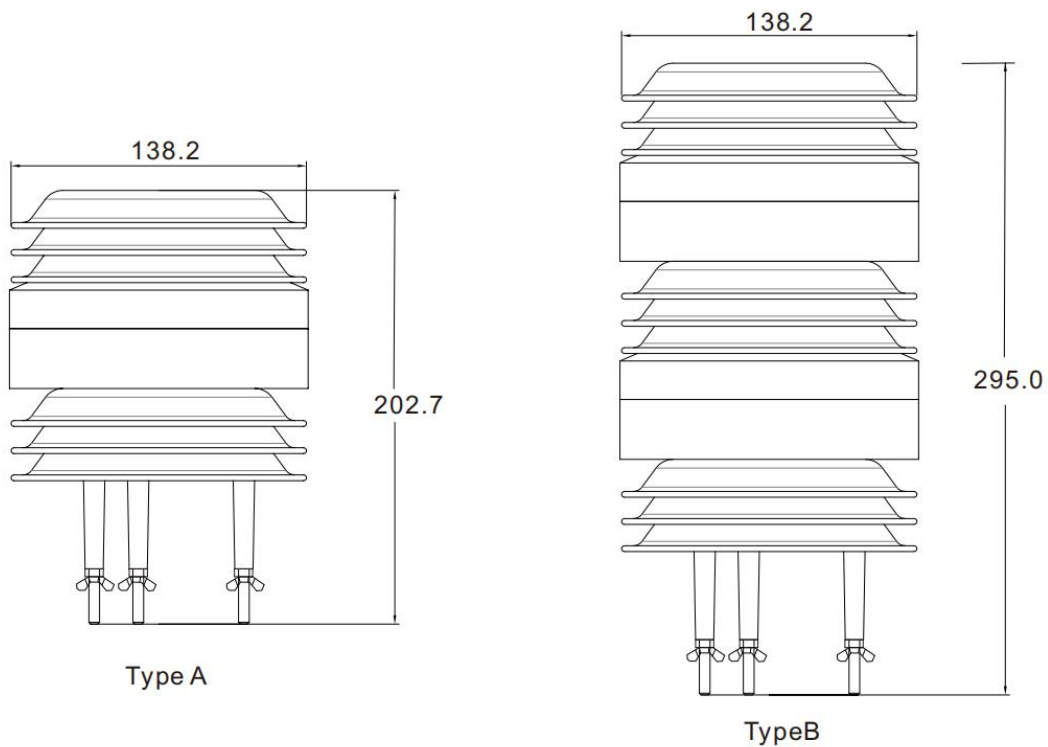
Item	Technical Specification		
	Range	Resolution	Accuracy
Temperature	-30℃~70℃	0.1℃	±0.3℃
Humidity	0~100%RH	0.1%RH	±3%RH
Illuminance	0~200K Lux	10Lux	±5%
Dew point temperature	-100℃~40℃	0.1℃	±0.3℃
Air pressure	300~1100hPa	0.1hPa	±1hPa
CO ₂	0~5000ppm	1ppm	±50ppm+3%FS
PM1.0/2.5/10	0~1000µg/m ³	1µg/m ³	±10%FS
TSP	0~30mg/m ³	1µg/m ³	±15%FS
Noise	30-120dB	0.1dB	±1.5dB
Standard Gas Sensor			
CO	0~1000ppm	1ppm	±5%FS
SO ₂	0~20ppm	0.01ppm	±3%FS
O ₃	0~20ppm	0.01ppm	±3%FS
NO ₂	0~20ppm	0.01ppm	±3%FS
H ₂ S	0~100ppm	0.01ppm	±3%FS
NH ₃	0~100ppm	0.01ppm	±3%FS
TVOC	0~10ppm	0.001ppm	±3%FS
CH ₂ O	0~2ppm	0.01ppm	±3%FS
CH ₄	0-100%LEL	0.1%LEL	±5%FS
O ₂	0~30%VOL	0.1%VOL	±3%FS
NO	0~250ppm	0.01ppm	±3%FS
Odour	0~50ppm	0.01ppm	±3%FS
High-Precision Gas Sensor			
CO	0~50ppm	0.001ppm	±3%FS
SO ₂	0~10ppm	0.001ppm	±2%FS
O ₃	0~10ppm	0.001ppm	±2%FS
NO ₂	0~10ppm	0.001ppm	±2%FS
H ₂ S	0~10ppm	0.001ppm	±2%FS
NH ₃	0~10ppm	0.001ppm	±2%FS
Supply	12-24VDC		
Output	RS485		
Warm Up Time	3min		
Response Time	<1s		
Stability	<±1%FS		
Repeatability	<±2%FS		
Operating Temperature	-20℃~+60℃@15-80%RH		
Storage	-40-70℃@20%-90%RH		
Shell Material	ABS		

4. Electrical Connections

Connector(Cable)	RS485
Red	V+
Black	V-
Yellow	RS485A
Green	RS485B

5. Product Dimensions

Unit:mm



Note:Due to different order parameters, there may be slight discrepancies in dimensions between actual products and images; please refer to the actual product dimensions.

6. Communication Protocol(MODBUS-RTU)

Parameter	Value
Data Bits	8 bits
Check Bit	None
Stop Bit	1 bit
Baud Rate	9600 bps
Slave Address	0x01 (Factory Default)

6.1 Read Real-Time Data(PM2.5)

Client sends:

01 03 00 00 00 01 840A

Return:

01 03 02 01 43 F825

6.1.1 Description of Return Data Format

No.	Conception	Byte Number	Description	Remarks
1	Address block	1	Address(0x01)	0x01
2	Function code	1	Only read(0x03)	0x03
3	Number of bytes	1	0X02	2bytes
4	Data block	2	PM2.5	0x0143(323 μ g/m ³)
5	Check block	2		0xF8 0x25

6.2 Modify Slave Address(Address setting range: 00H to FFH)

Client sends:(Changed to 02H.)

Slave id	Function code	Address_H	Address_L	New id_H	New id_L	CRC_L	CRC_H
0x00	0x06	0x00	0x0F	0x00	0x02	0x39	0xD9

Response:

Slave id	Function code	Address_H	Address_L	New id_H	New id_L	CRC_L	CRC_H
0x02	0x06	0x00	0x0F	0x00	0x02	0x38	0x3B

Note:If you forget the original address, you should use the broadcast address(FEH) (ensure that no other devices on the bus at this time).

6.3 Register Description

6.3.1 Standard Gas Register Description

Register Name	Function Code	Register Address	Data Type	Data Length (Byte)	R/W	Remark
PM2.5	0x03	0x0000	Int16	2	R	1μg/m ³
PM10	0x03	0x0001	Int16	2	R	1μg/m ³
TSP	0x03	0x0002	Int16	2	R	1μg/m ³
Air Temperature	0x03	0x0003	Int16	2	R	0.1℃
Air Humidity	0x03	0x0004	Int16	2	R	0.1%RH
Air Pressure	0x03	0x0005	Int16	2	R	0.1hPa
CO ₂	0x03	0x0006	Int16	2	R	1ppm
O ₂	0x03	0x0007	Int16	2	R	0.1%VOL
SO ₂	0x03	0x0008	Int16	2	R	0.01ppm
NO ₂	0x03	0x0009	Int16	2	R	0.01ppm
O ₃	0x03	0x000A	Int16	2	R	0.01ppm
CO	0x03	0x000B	Int16	2	R	1ppm
H ₂ S	0x03	0x000C	Int16	2	R	0.01ppm
NH ₃	0x03	0x000D	Int16	2	R	0.01ppm
TVOC	0x03	0x000E	Int16	2	R	0.001ppm
Sensor Address	0x06	0x000F	Int16	1	W	/
CH ₄	0x03	0x0010	Int16	2	R	0.1%LEL
CL ₂	0x03	0x0011	Int16	2	R	0.01ppm
PM1.0	0x03	0x0012	Int16	2	R	1μg/m ³
CH ₂ O	0x03	0x0013	Int16	2	R	0.01ppm
Odour	0x03	0x0014	Int16	2	R	0.01ppm
NO	0x03	0x0015	Int16	2	R	0.01ppm
Illuminance	0x03	0x0016	Int16	2	R	10Lux
Civil Gas	0x03	0x0017	Int16	2	R	0.1%LEL
Air Quality	0x03	0x0018	Int16	2	R	0.01mg/m ³
Dew Point Temperature	0x03	0x0019	Int16	2	R	0.1℃
HC	0x03	0x001A	Int16	2	R	0.01ppm
Noise	0x03	0x001B	Int16	2	R	0.1db
N ₂ O	0x03	0x001C	Int16	2	R	0.01%VOL

6.3.2 High-Precision Gas Register Description

Register Name	Function Code	Register Address	Data Type	Data Length (Byte)	R/W	Remark
SO ₂	0x03	0x0008	Int16	2	R	0.001ppm
NO ₂	0x03	0x0009	Int16	2	R	0.001ppm
O ₃	0x03	0x000A	Int16	2	R	0.001ppm
CO	0x03	0x000B	Int16	2	R	0.001ppm
H ₂ S	0x03	0x000C	Int16	2	R	0.001ppm
NH ₃	0x03	0x000D	Int16	2	R	0.001ppm

7. Precautions

Powered Wiring Prohibition

- Do not connect wires while powered. Only energize the sensor after confirming correct wiring.

Component Modification Restriction

- Do not alter factory-soldered components or pre-connected wires.

Clearly Identify the Object of Detection

- Do not detect gases outside of their design range, as this may result in no response or false alarms.

Precision Handling Requirement

The sensor is a precision device. Avoid:

- Unauthorized disassembly
- Do not touch internal components to prevent product damage

Note: Unauthorized modifications void the warranty.

8. Troubleshooting

Incorrect Output Signals (Analog/RS232/RS485):

- Verify wiring correctness and secure connections.
- Check if the serial port is occupied or malfunctioning.
- Confirm serial port settings (baud rate, data/stop bits) match device requirements.

Persistent Issues:

- Contact the manufacturer if the above steps fail to resolve the problem.

9. Product Maintenance**Maintenance and Safety**

- Regularly clean and inspect the sensor to maintain performance.
- Do not expose the sensor to extreme temperatures, moisture, or corrosive substances unless explicitly specified.
- Unauthorized disassembly, modification, or repairs may void the warranty and lead to malfunctions.

Troubleshooting Protocol

- In case of malfunction, refer to the troubleshooting section of this manual.
- Do not attempt unauthorized disassembly or repairs.
- Contact the manufacturer's after-sales department directly for technical support.

10. Warranty Terms

This product comes with a one-year warranty, starting from the date of delivery. Within twelve months, the Company shall be responsible for free repair or replacement of any failure caused by sensor quality issues (non-human damage). Fees will be charged for repairs or replacements after the warranty period expires.

 Complies with applicable CE directives.

Manual subject to change without notice.