RK100-05 Pipe Wind Speed Sensor User Manual

Revision Time	Reviser	Current Version	Remarks
20250709	SUN	V5.0	

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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
Pipe wind speed sensor	1	
Cable	1	The length depends on the order
Accessory	1	Set

1. Product Introduction

The RK100-05 Pipe Wind Speed Sensor is a highly stable and multifunctional measuring instrument suitable for measuring positive, negative, and differential pressures of gases within a range of 1000Pa. Based on the Bernoulli equation and pitot tube principle, pressure is converted into wind speed, air output, and the host is equipped with a standard pitot tube to measure the flow rate and velocity of the air duct, as well as temperature and pressure. This wind speed transmitter is equipped with an imported wind pressure detection sensor, which can accurately measure the flow rate, velocity, pressure, and temperature of the air duct.

2. Product Features

- Adopting high-precision micro pressure sensors
- One click zero adjustment function
- Multi functional high-resolution
- High precision, high stability

3. Specifications

Items	Specification
Operating Pressure	a. Various ranges within 0-5KPa (specific reservation) b. Wind speed range:<=100 m/s c. Airflow range:<999999 m^3/h
Output Signal	4-20mA/0-10V(Simultaneously possessing) 0-5V,0-20mA,Modbus-RTU(Customization is required)
Resolution	a: Pressure 0.1Pa b: Wind speed of 0.1m/s c: Temperature 0.1℃
Response Time	<1s
Maximum Overload Capacity	≤200%F
Power Supply	24VAC/24VDC ± 20% or 12VDC (Order selection)
Operating Temperature	-10℃-+70℃
Electric Connection	4-Position wiring terminal+M20 waterproof cable connector

4. 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)

4.1 Read Real-Time Data

Client sends:

01 03 00 00 00 05 85C9

Return:

01 03 0A 09 B8 07 F4 05 BA 00 00 01 13 CB64

4.1.1 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	0X0A	10bytes
4	Data block	2	Pressure	0x09B8(2488Pa)
5	Data block	2	Wind speed	0x07F4(20.36m/s)
6	Data block	2	Air volume	0x000005BA(1466m^3/h)
7	Data block	2	Temperature	0x0113(27.5℃)
8	Check block	2		0xCB 0x64

5. Product Dimensions

Unit:mm

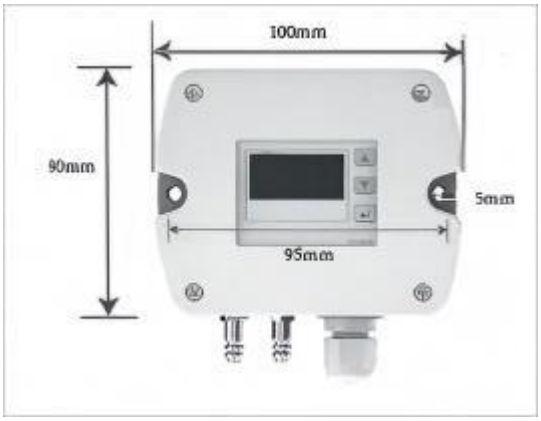

Figure 5.1
Front View with Dimensional Details

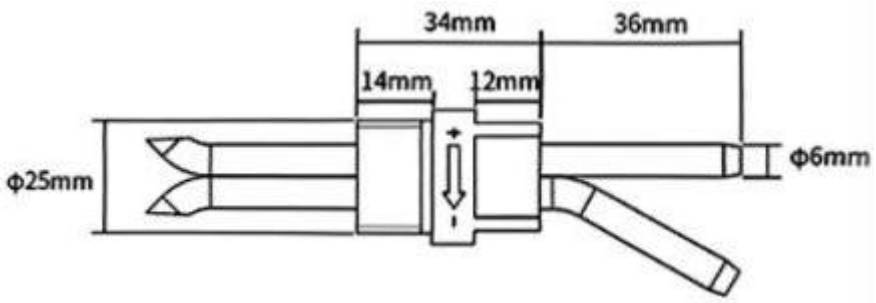

Figure 5.4
Accessory Dimension Diagram

6. Installation Guidelines

- Zero the instrument before measurement

Without connecting the pressure, long press the ">Q<" reset button for 2 seconds to clear the current starting pressure and perform pressure clearing to zero.

- Measure gauge pressure

Connect the nozzle to the measured pressure source with a rubber hose, and connect the positive pressure nozzle when the pressure is higher than atmospheric pressure; Measure below atmospheric pressure and connect to a negative pressure nozzle.The other nozzle is open to the atmosphere, and the instrument reading is the gauge pressure.

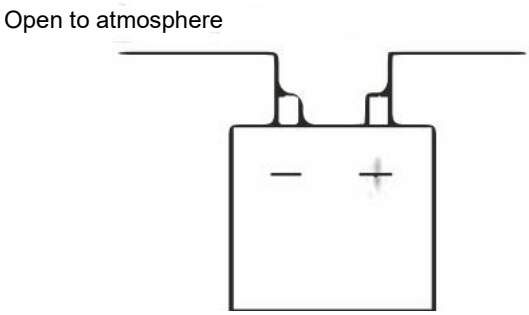

Figure 6.1
Measure positive gauge pressure

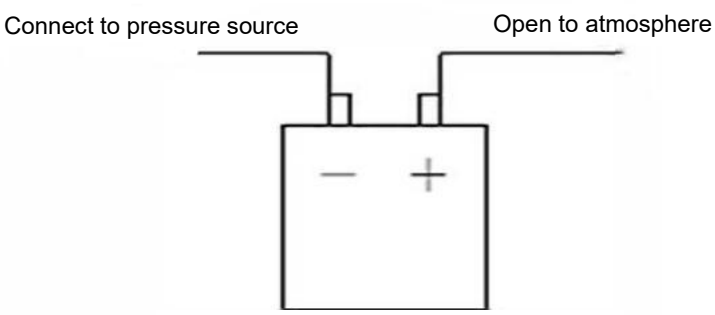

Figure 6.2
Measure negative gauge pressure

- Measure differential pressure

The positive and negative nozzles of the instrument are respectively connected to high and low pressure sources, and the reading is the differential pressure value.

- Measure wind speed

The top of the pitot tube must be kept parallel to the windward side.Connect the full pressure (+) to the positive end of the differential pressure gauge.The static pressure (-) is connected to the negative end of the differential pressure gauge.The displayed pressure is the dynamic pressure at this time, also known as "wind pressure".

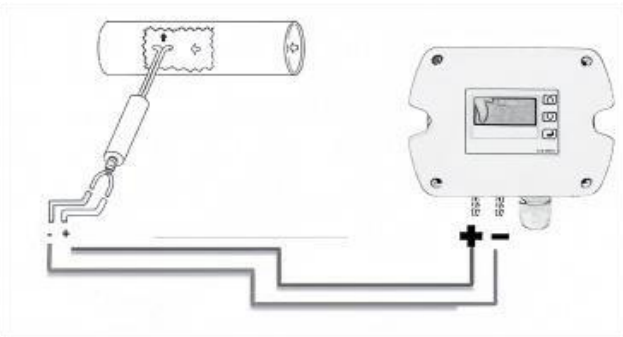

Figure 6.3

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.

Work Environment

- The working area of the instrument must be kept away from vibration sources and strong electromagnetic fields, and the ambient temperature must be stable.

Measurement Object Restrictions

- Generally, it is not allowed to measure the pressure of highly corrosive gases and liquids.
- The measured pressure shall not exceed the allowable overload pressure range.

Precision Handling Requirement

The sensor is a precision device. Avoid:

- Unauthorized disassembly
- Structural components are strictly prohibited from being compressed under stress

  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.

- Depending on the concentration of smoke and dust, the sampling pipe and gas connection pipe fixed on the chimney should be removed every 1-3 months for manual ash removal.
- Check if the fixing screws of the host and the sampling tube fixed on the chimney are loose, and tighten them in a timely manner.

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.

CE Complies with applicable CE directives.

Manual subject to change without notice.

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