RK100-02 Wind Speed Sensor

User Manual

Revision Time	Reviser	Current Version	Remarks
20250410	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
Wind speed sensor	1	
Cable	1	The length depends on the order

1. Product Introduction

The RK100-02 Wind Speed Sensor is a high-precision 3-cup anemometer designed for accurate wind speed measurement. The cups are made of carbon fiber, ensuring high strength and a low startup threshold. The sensor's signal processing unit is integrated into the housing for enhanced durability and reliability.It can be widely used in meteorology, marine applications, environmental monitoring, airports, harbors, laboratories, industrial settings and agricultural areas.

2. Product Features

- Low startup threshold
- Overall carbon fiber material
- Strong corrosion resistant ability
- Various optional output signals
- Light structure
- Easy installation

3. Specifications

Output	Pulses	4-20mA	RS485	0-2V/0-5V/0-10V
Supply Voltage	5-24VDC	12-24VDC	12-24VDC	12-24VDC
Load Capacity	>2kΩ	<500Ω(typ250Ω)		>2kΩ
Range	0-45m/s	0-45m/s	0-45m/s	0-45m/s
Accuracy	±（0.3+0.03V）m/s			
Starting Threshold	<0.5m/s			
Limit Wind Speed	50m/s			
Ingress Protection	IP65			
Operating Temperature	-40℃-+50℃			
Cable Grade	Nominal voltage:300V,Temperature grade:80℃			
Weight(Unpacked)	170g			
Dimension	Cup rotor:ø179mm, Height:160mm			
Main Material	Carbon fiber			
Storage Condition	10℃-50℃@20%-90%RH			

4. Electrical Connections

Connector(Cable)	Pulses/Voltage/Current	RS485
Red	V+	V+
Black/Green	V-	V-
Yellow	Signal+	RS485A
Blue		RS485B

5. Output Types & Formulas

Pulses Type	F=0,V=0; F≠0,V=0.1+0.0875×F	
Current Type	4-20mA	V=(I-4)/(20-4)*45(Range:0-45m/s)
Voltage Type	0-5V	V=U/5*45(Range:0-45m/s)
	0-2.5V	V=U/2.5*45(Range:0-45m/s)

F: Output frequency in Hz;

V: Wind speed data in m/s;

U: Transmitter output voltage in V;

I: Transmitter output current in mA.

6. Product Dimensions

Unit:mm

ø15mm (recommended reserving ø 25mm for wiring)

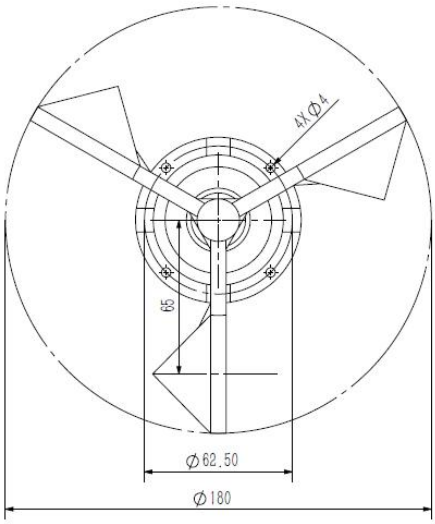

Figure 6.1
Top View

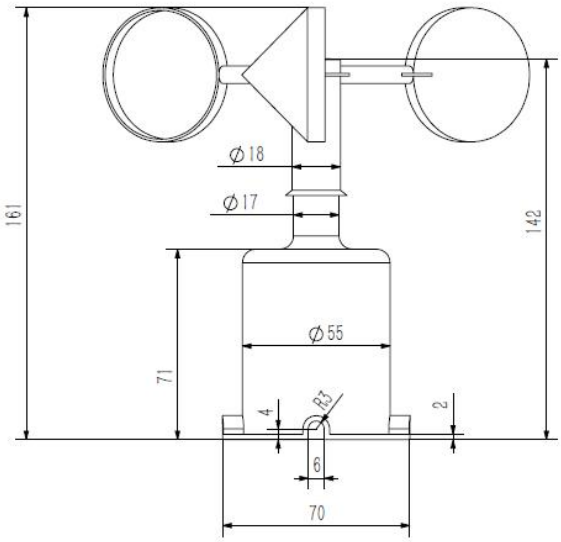

Figure 6.2
Side View

7. 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)

7.1 Read Real-Time Data

Client sends:

01 03 00 00 00 01 840A

Return:

01 03 02 00 B4 B833

7.1.1 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	Wind speed data	0x00B4(18m/s)
5	Check block	2		0xB8 0x33

7.2 Modify Slave Address

Client sends:(Change slave address from 00H to 01H.)

Slave id	Function code	New Address	CRC_L	CRC_H
0x00	0x10	0x01	0xBD	0xC0

Response:

Slave id	Function code	CRC_L	CRC_H
0x00	0x10	0x00	0x7C

7.3 Read Sensor Address

Client sends:

Slave id	Function code	CRC_L	CRC_H
0x00	0x20	0x00	0x68

Return:

Slave id	Function code	Current Address	CRC_L	CRC_H
0x00	0x20	0x01	0xA9	0xC0

8. Installation Guidelines

- Ensure no obstacles (e.g., buildings, trees, billboards) exist around the anemometer cups to prevent local airflow interference.
- Avoid areas with strong electromagnetic interference (e.g., high-voltage power lines, motors) and corrosive environments.

8.1 Installation Method

Flange mounted, fix four screws on the bracket and keep the product horizontal.

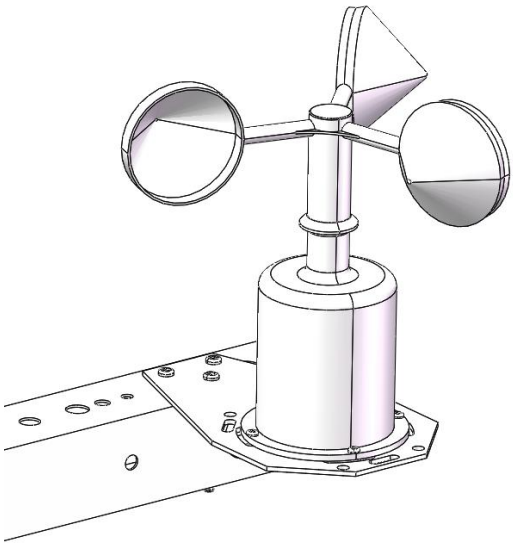

Figure 8.1.1
Wind Speed Sensor Mounted on a Support Structure

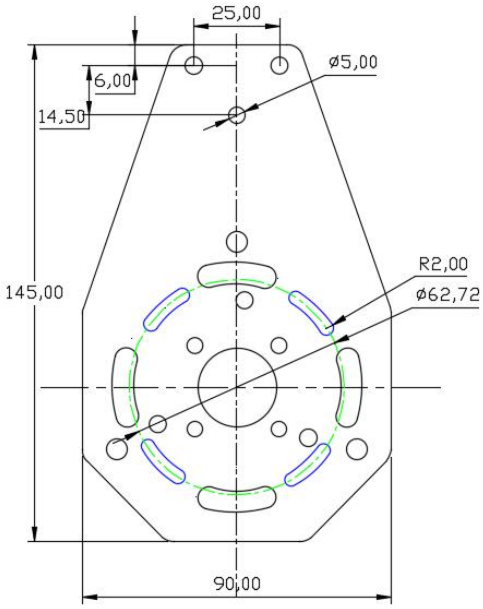

Figure 8.1.2

Mounting Plate Dimensions and Hole Specifications(Unit:mm)

9. 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.

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.

10. 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.

11. 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.

12. 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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