

RK100-01 Wind Speed Sensor

User Manual



Revision Time	Reviser	Current Version	Remarks
20250329	SUN	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
Wind speed sensor	1	
Cable	1	The length depends on the order
Mounting screw	1	Set

1. Product Introduction

The RK100-01 Wind Speed Sensor is specifically designed to accurately and reliably measure wind velocity under the adverse environmental conditions. Digital circuits capable of strong RFI & EMI resistance and automatic temperature compensation are build-in, it outputs voltage and current signals by electromagnetic induction, the value and horizontal wind speed are linear relation. Shell is made of high-strength aluminum alloy, the sensor housing is made of aluminum alloy, the PCB board is painted with anti-corrosion coating, featured with water proof, corrosion resisting. Inside and turning position have sealing rings with nice sealing function, stop water, salt fog and dust getting in. The RK100-01 Wind speed sensor has good performance in harsh environment.

2. Product Features

- Low startup threshold
- Robust all-metal construction
- Strong corrosion resistant ability
- Wide measurement range with high stability
- Various optional output signals
- Easy installation

3. Applications

- Weather monitoring stations
- Safety monitoring of high-altitude equipment
- Ports
- Solar and wind power generation
- Mobile weather monitoring vehicles
- Marine vessels
- Remote airports & helipads
- Road & rail tunnels

4. Specifications

Output	Pulses(3.3V)	4-20mA	RS485	0-2V/0-5V/0-10V
Supply Voltage	5-24VDC	12-24VDC	12-24VD	12-24VDC
Load Capacity	>2k Ω	<500 Ω (typ 250 Ω)		>2k Ω
Range	0-30m/s,0-50m/s,0-60m/s			
Accuracy	$\pm(0.3+0.03V)m/s$, V is current wind speed			
Response Time	<1s			
Starting Threshold	<0.3m/s			
Limit Wind Speed	70m/s			
Ingress Protection	IP65			
Operating Temperature	-30 $^{\circ}$ C-+70 $^{\circ}$ C			
Weight(Unpacked)	420g			
Dimension	Cup rotor: $\varnothing$ 220mm, Height:175mm			
Main Material	Aluminum Alloy			
Finish	Polyester powder electrostatic spraying(black)			
Storage Condition	10 $^{\circ}$ C-60 $^{\circ}$ C@20%-90%RH			

5. Electrical Connections

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

6. Output Types & Formulas

Pulses Type	$V=0.083 \cdot F$	
Current Type	Range:0-30m/s	$V=(I-4)/(20-4) \cdot 30$
	Range:0-60m/s	$V=(I-4)/(20-4) \cdot 60$
Voltage Type	Range:0-30m/s	$V=U/(\text{full scale voltage-zero point voltage}) \cdot 30$
	Range:0-60m/s	$V=U/(\text{full scale voltage-zero point voltage}) \cdot 60$

F: Output frequency in Hz;

V: Wind speed data in m/s;

U: Transmitter output voltage in V;

I: Transmitter output current in mA.

7. Product Dimensions

Unit:mm

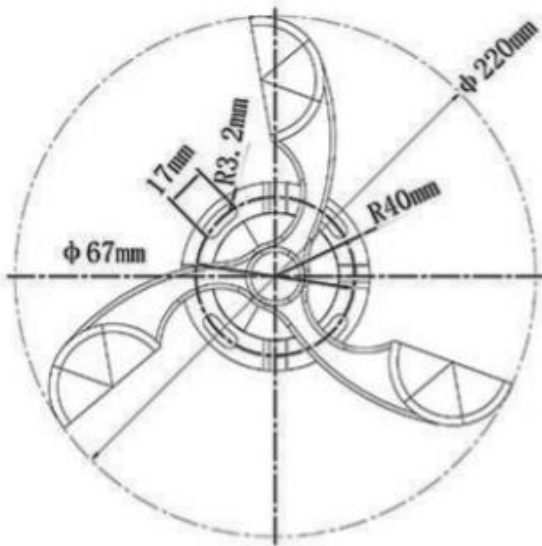


Figure 7.1
Top View with Dimensional Details

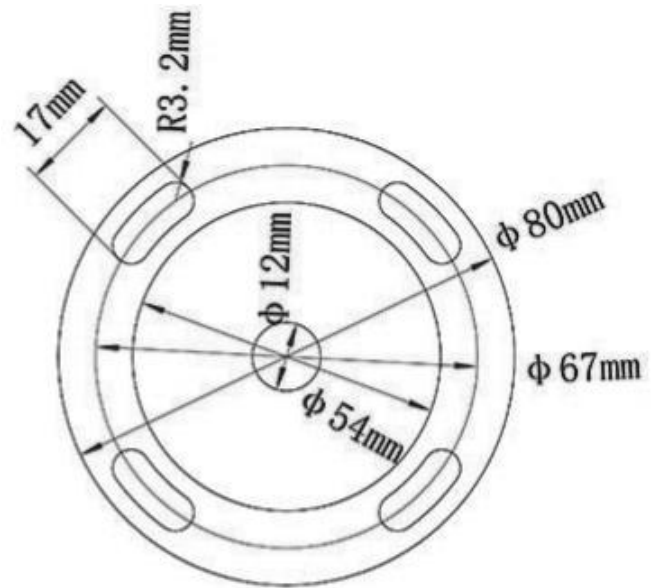


Figure 7.2
Bottom View with Dimensional Details



Figure 7.3

Perspective View with Mounting Hole Design

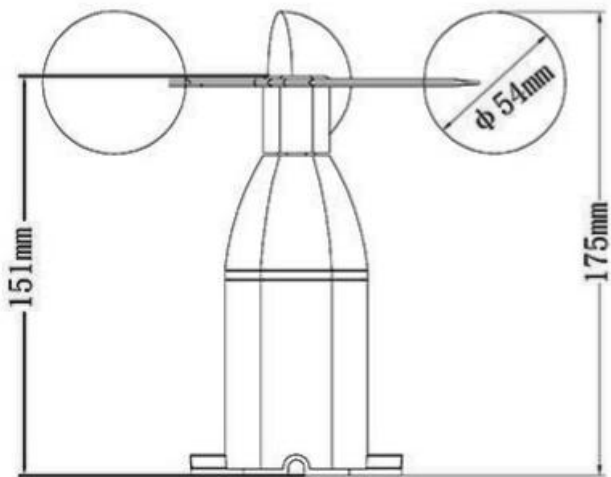


Figure 7.4

Side View with Height and Width Dimensions

8. 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)

8.1 Read Real-Time Data

Client sends:

01 03 00 00 00 01 840A

Return:

01 03 02 00 2E 3858

8.1.1 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	0x002E(4.6m/s)
5	Check block	2		0x38 0x58

8.2 Modify Slave Address

Client sends: (Change slave address from 01H to 02H.)

Slave id	Function code	Address_H	Address_L	New id_H	New id_L	CRC_L	CRC_H
0x01	0x06	0x00	0x30	0x00	0x02	0x08	0x04

Response:

Slave id	Function code	Address_H	Address_L	New id_H	New id_L	CRC_L	CRC_H
0x01	0x06	0x00	0x30	0x00	0x02	0x08	0x04

9. 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.

9.1 Installation Method

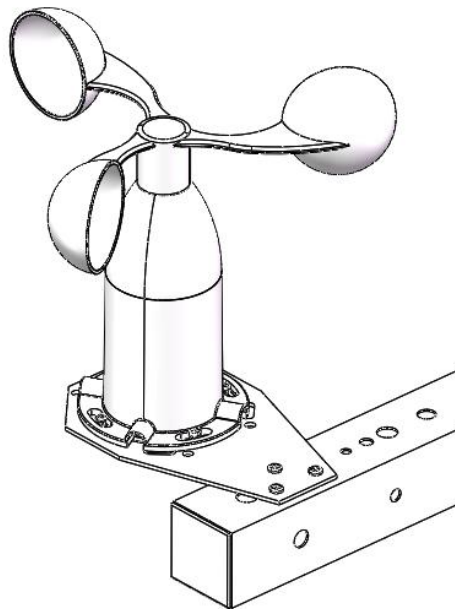


Figure 9.1
Wind Speed Sensor Mounted on a Support Structure

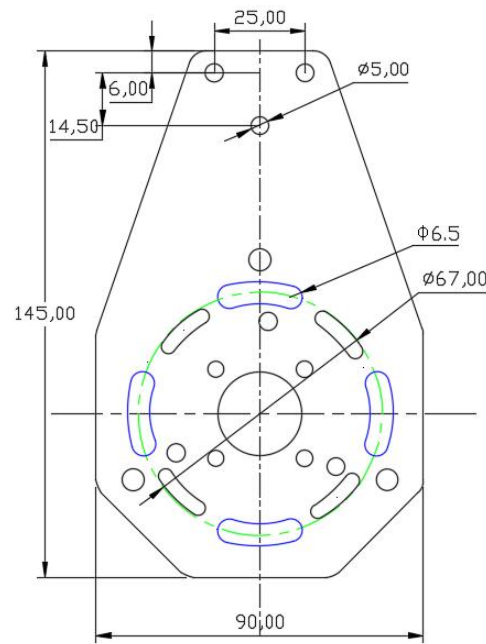


Figure 9.2

Mounting Plate Dimensions and Hole Specifications (Unit:mm)

10. Precautions

Package and Model Verification

- Ensure the packaging is intact and verify the sensor model and specifications match your purchased product.

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
- Structural components are strictly prohibited from being compressed under stress

Note: Unauthorized modifications void the warranty.

11. 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.

12. 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.

13. 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.

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