RK110-01 Wind Direction Sensor

User Manual

Revision Time	Reviser	Current Version	Remarks
20250410	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 direction sensor	1	
Cable	1	The length depends on the order
Mounting screw	1	Set

1. Product Introduction

The RK110-01 Wind direction sensor is a sensitive wind direction indicator that gives a visual indication of wind direction. Digital circuits capable of strong RFI & EMI resistance and automatic temperature compensation are build-in. The construction of the sensor reflects the requirements for reliability and durability. Only the highest quality corrosion resistant materials, such as high strength aluminum and stainless steel are used. The sensor has good resistance to sand, dust, salt spray and fungus resistance. This sensor is ideal for wind resource assessment studies and similar applications requiring accuracy, reliability and minimal maintenance.

2. Product Features

- Low startup threshold
- Massive all-metal construction
- Strong corrosion resistant ability
- Various optional output signals
- Surge protection design
- Double bearing design
- Easy Installation

3. Specifications

Output	4-20mA	RS485	0-5V/0-10V
Supply Voltage	12-24VDC	12-24VDC	12-24VDC
Load Capacity	<500Ω(typ250Ω)		>2kΩ
Range	0-360°		
Accuracy	±3°	±3°	±3°
Resolution	1° or 22.5°	1° or 22.5°	1° or 22.5°
Power Consumption	<0.7W	<0.3W	<0.3W
Starting Threshold	<0.5m/s		
Limit Wind Speed	70m/s		
Ingress Protection	IP65		
Operating Condition	-40℃-+70℃@≤100%RH		
Weight(Unpacked)	320g		
Dimension	Turning Radius:226mm,Height:200mm		
Main Material	Vane:304 stainless steel, Main body: Aluminum alloy		
Finish	Polyester powder electrostatic spraying(black)		
Storage Condition	10℃-60℃@20%-90%RH		

4. Electrical Connections

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

5. Output Types & Formulas

Resolution=1°	**Current Type**	A(°)=(I-4)/(20-4)*360
	Voltage Type	A=(°)=U/(full scale voltage-zero point voltage)*360

A: Wind direction in degree;

I: Wind direction current in mA;

U:Wind direction voltage in V;

6. Product Dimensions

Unit:mm

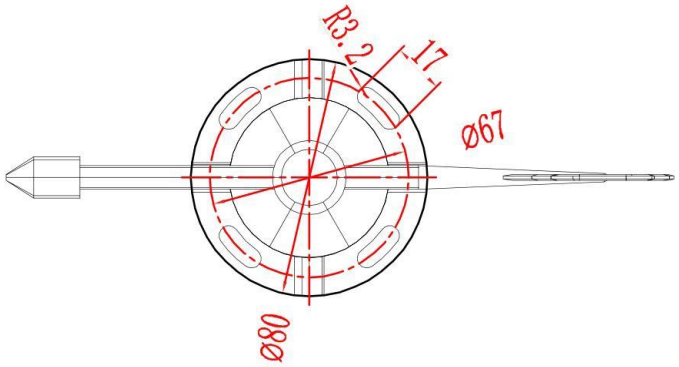

Figure 6.1
Top View with Dimensional Details

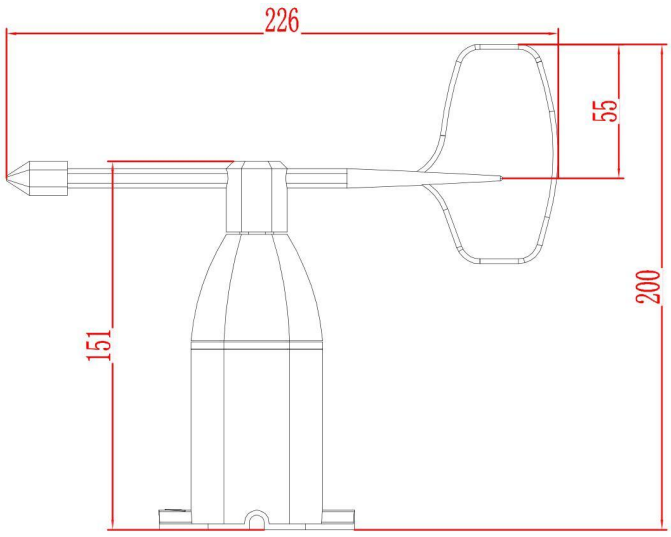

Figure 6.2
Side View with Height and Width Dimensions

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 E1 780C

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 direction	0x00E1(22.5°)
5	Check block	2		0x78 0x0C

7.2 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

8. Installation Guidelines

- Avoid areas with strong electromagnetic interference (e.g., high-voltage power lines, motors) and corrosive environments.
- There is **an arrow marking** on the bottom of the product, which should point to the north during installation.

8.1 Installation Method

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

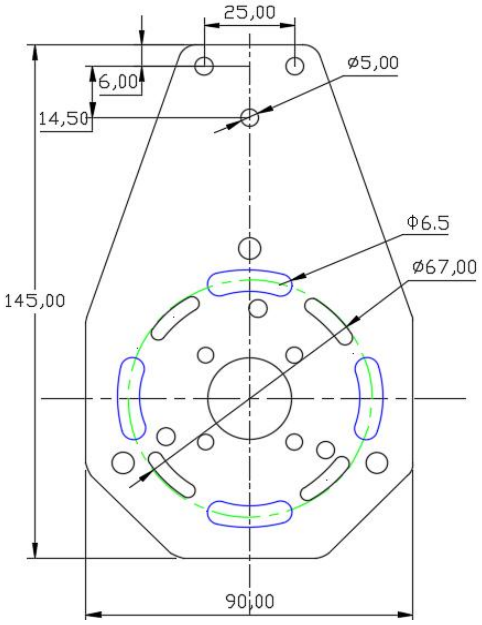

Figure 8.1.1

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.

Hunan Rika Electronic Tech Co., Ltd
www.rikasensor.com
No. 268, Xinxing Road, Yuhua District,
Changsha City, China

info@rikasensor.com