RK110-02 Wind Direction Sensor

User Manual

Revision Time	Reviser	Current Version	Remarks
20250414	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 direction sensor	1	
Cable	1	The length depends on the order
Compass	1	

1. Product Introduction

The RK110-02 wind direction sensor is a sensitive wind direction indicator that gives a visual indication of wind direction. High precision magnetic sensitive chips are built in the housing shell. The wind vane is constructed on low inertia light metal to show wind directions. The product is wide range, good linearity, strong anti- lightning strike, good performance.

2. Product Features

- Low starting threshold
- Great dynamic characteristics
- Overall carbon fiber material
- Strong corrosion resistant ability
- Light structure
- Various optional output signals
- Easy Installation

3. Specifications

Output	4-20mA	0-5V	RS485
Supply Voltage	5V,12V-24V	5V,12V,24V	5V,12V-24V
Load Capacity	<500Ω(typ250Ω)	>1kΩ	
Range	0~360°		
Accuracy	±3°		
Resolution	1°		
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)	195g		
Dimension	Turning Radius:147mm,Height:199mm		
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

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

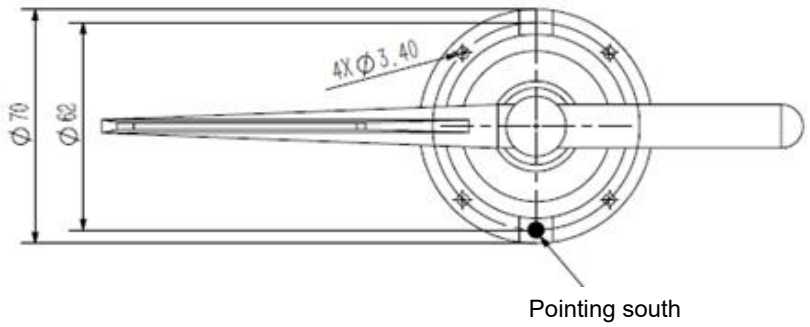


Figure 6.1
Top View with Dimensional Details

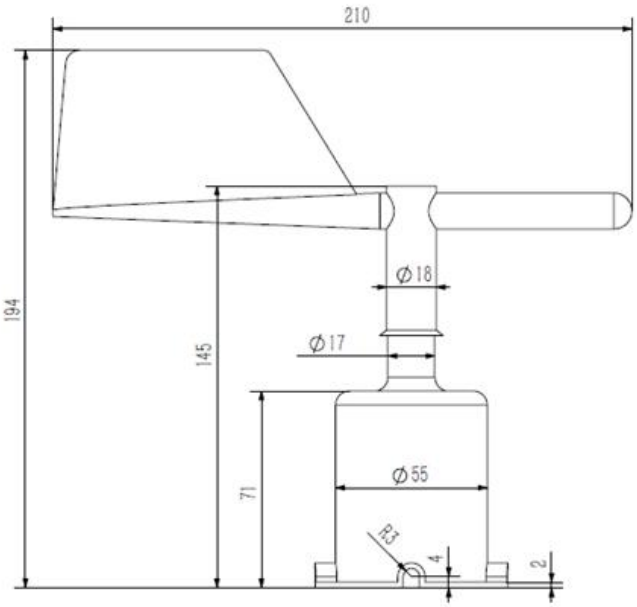


Figure 6.2
Side View with Height and Width Dimensions

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 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 Direction	0x00B4(180°)
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:

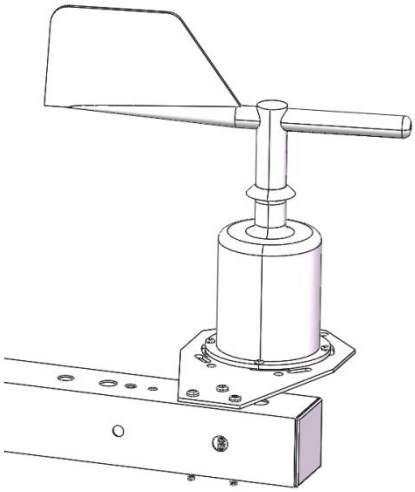
Slave id	Function code	Current Address	CRC_L	CRC_H
0x00	0x20	0x01	0xA9	0xC0

8. Installation Guidelines

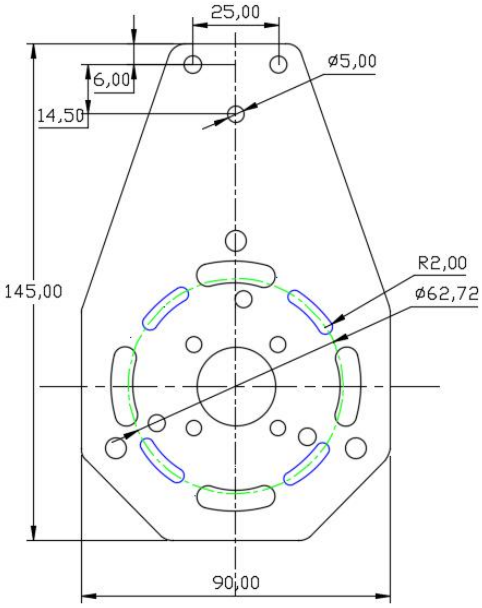
- Avoid areas with strong electromagnetic interference (e.g., high-voltage power lines, motors) and corrosive environments.
- There is an **arrow marker on the label pointing to a white dot on the bottom edge**. During installation, please ensure the marker points to the south (you can use a compass for positioning).

8.1 Installation Method

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



Mounted on a Support Structure



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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