RK330-01 Atmospheric Temperature, Humidity & Pressure Sensor

Revision Time	Reviser	Current Version	Remarks
20250506	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
Sensor	1	
Cable	1	The length depends on the order
Stevenson screen	1	optional
Bracket	1	optional

1. Product Introduction

RK330-01 Atmospheric Temperature, Humidity & Pressure Sensor is a professional measurement of air temperature, relative humidity & barometric pressure. Sensors are built-in the water-proof and anti-UV shelter. It is widely used in agriculture, forestry, meteorology as well as a climate chamber, warehousing and other places. This model also can be equipped with radiation shield (RK95-01) to protect the sensors from solar radiation and rain.

2. Product Features

- High sensitivity
- Fast response time
- Long service life
- Low consumption
- Good stability of output
- Strong environmental adaptability
- Integrated temperature humidity air pressure at the same time

3. Specification

Item	Technical Specification		
	Temperature	Humidity	Pressure
Range	-40-60℃ (Customizable, subject to the product label.)	0-100%RH	30-110kPa (300-1100hPa)
Resolution	0.1℃	0.1%RH	0.1hPa
Accuracy(Typical)	±0.5℃	±3%RH	±1hPa
Accuracy(High-precision) Only for digital output	±0.2℃	±2% RH	±1hPa
Supply	5VDC, 12-24VDC		
Output Signal	4-20mA,0-5V,0-10V,RS485(MODBUS),SDI-12,IIC		
Current Consumption	<5mA		
Stability	Temperature,±0.1℃(2years);Humidity,±2% RH(2years)		
Operating Temperature	-40℃-+80℃		
Ingress Protection	IP65		
Storage	10-60℃@20%-90%RH		
Weight(Unpacked)	120g		
Probe Material	ABS		
Radiation	RK95-01,11 plates		

4. Electrical Connections

Connector(Cable)	Current/Voltage	Cable	RS485/RS232
Red	V+	Red	V+
Black	V-	Black	V-
Brown	Temp	Yellow	RS485A/RXD
White	Humidity	Green	RS485B/TXD
Yellow	Pressure		

5. Output Types & Formulas

Voltage Type	F=V/(full scale voltage-zero point voltage)*(Max Range-Min Range) + Min Range
Current Type	F=(I-4)/16*(Max Range-Min Range) + Min Range

F: Current measurement parameters;

V: Transmitter output voltage in V;

I: Transmitter output voltage in mA;

6. Product Dimensions

Unit：mm

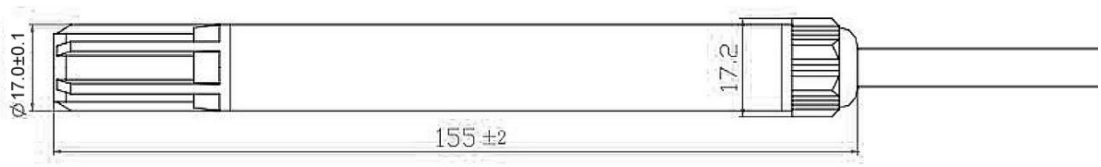

Figure 6.1
Dimensional Specifications

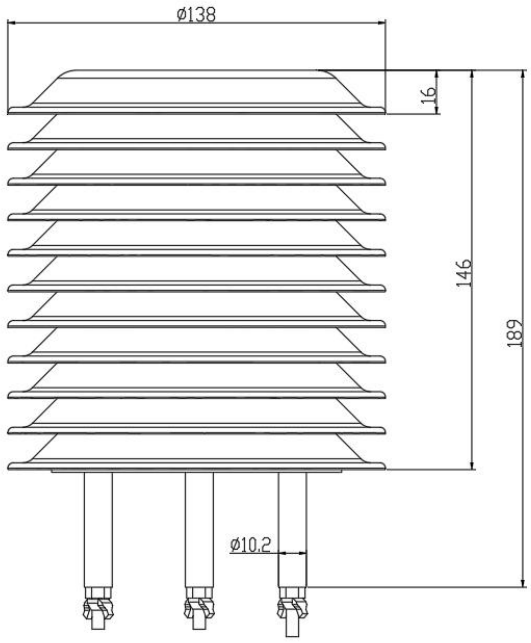

Figure 6.2
Dimensional Specifications of Multi-Plate Radiation Shield

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 RK330-01A Read Real-time Data

Client sends:

01 03 00 00 00 02 C40B

Return:

01 03 04 0114 0164 BBB0

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	0X04	4bytes
4	Data block	2	Temperature value	0x0114(27.6℃)
5	Data block	2	Humidity value	0x0164(35.6%)
6	Check block	2		0xBB 0xB0

7.2 RK330-01B Read Real-time Data

Client sends:

01 03 00 00 00 03 05CB

Return:

01 03 06 01 21 01 64 27 28 C76E

7.2.1 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	0X06	6bytes
4	Data block	2	Temperature value	0x0121(28.9℃)
5	Data block	2	Humidity value	0x0164(35.6%)
6	Data block	2	Pressure value	0x2728(1002.4hPa)
7	Check block	2		0xC7 0x6E

7.3 RK330-01C Read Real-time Data

Client sends:

01 03 00 00 00 01 840A

Return:

01 03 02 0114 B9DB

7.3.1 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	Temperature value	0x0114(27.6℃)
5	Check block	2		0xB9 0xDB

7.4 RK330-01D Read Real-time Data

Client sends:

01 03 00 01 00 01 D5CA

Return:

01 03 02 0164 B83F

7.4.1 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	Humidity value	0x0164(35.6%)
5	Check block	2		0xB8 0x3F

Note: If the data≧0x8000, for example:0xFF05,according to the following method to calculate:0xFF05-0xFFFF-0x01=(65285)D-(65535)D-(1)D=(-251)D,-251/10=-25.1(℃)

7.5 Modify Slave Address

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

ID	Function code	Address_H	Address_L	Date_H	Date_L	CRC_L	CRC_H
0x01	0x06	0x00	0x00	0x00	0x02	0x08	0x0B

Response:

ID	Function code	Address_H	Address_L	Date_H	Date_L	CRC_L	CRC_H
0x01	0x06	0x00	0x00	0x00	0x02	0x08	0x0B

Note: If you forget the original address, you should use the broadcast address(FEH) (ensure that no other devices on the bus at this time).

8. Installation Guidelines

- Install the product in stable environment area, avoid direct sunlight, away from windows air-conditioning, heating and other equipment.
- Ensure free circulation of surrounding air and avoid enclosed spaces.
- The installation height should be 1.5m above the ground.

8.1 Installation Method

Figure 8.1.1 Diagram of fixed sensor

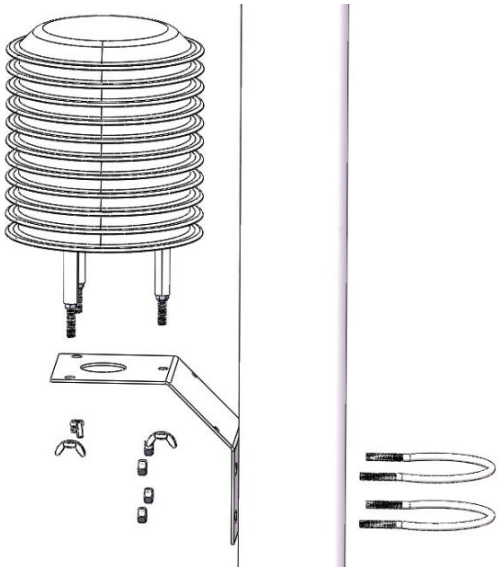

Figure 8.1.2 Installation Diagram

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.
- Check if the sensor housing is damaged or corroded and confirm that the hundred leaf box is unobstructed and well ventilated.
- 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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