Veinasa XS-RS04-RS485

Veinasa XS-RS04-RS485 Tipping Bucket Rain Gauge Instruction Manual

Model: XS-RS04-RS485

1. Introduction

The Veinasa XS-RS04-RS485 is an all-stainless steel tipping bucket rain gauge designed for accurate and reliable rainfall measurement. This device utilizes an RS485 output for efficient data transmission, making it suitable for various environmental monitoring applications. Its robust construction ensures high precision and long-term stability in diverse weather conditions.



Image 1: Overview of the Veinasa XS-RS04-RS485 Tipping Bucket Rain Gauge, showing the collection bucket and the internal tipping mechanism. Key specifications like 0.1mm resolution, 0.01mm~4mm/min rain intensity range, RS485 signal output, and 5~24VDC power supply are indicated.

2. Product Features

- **Resolution Options:** Available with 0.1mm, 0.2mm, or 0.5mm resolving power for precise measurement.
- **High Accuracy:** Engineered for high precision and excellent stability in rainfall detection.
- **Reliable Tipping Mechanism:** Features well-manufactured tipping bucket components with minimal friction, ensuring sensitive operation, stable performance, and reliable data collection.
- **Durable Construction:** The instrument's shell is crafted from 304 stainless steel, providing strong rust resistance and a robust, high-quality appearance.
- **Optimized Rain Inlet:** The rain inlet is an integrally punched and pulled 304 stainless steel shell, designed for high smoothness to minimize water stagnation and reduce measurement errors.

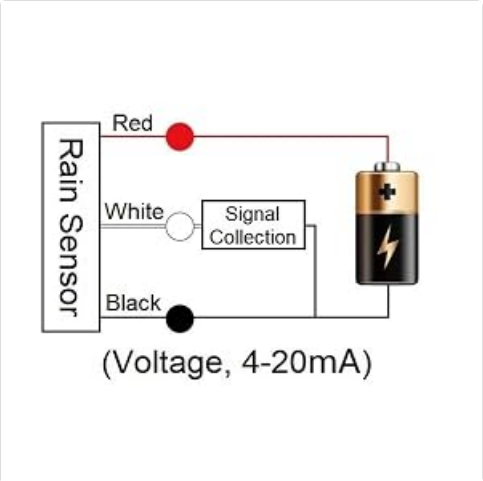


Image 2: The compact, all-in-one design of the rain gauge, highlighting its small size and ease of installation.

3. Setup

3.1 Mounting the Rain Gauge

Select a stable, level location for installation, free from obstructions such as buildings, trees, or other structures that could interfere with rainfall collection. The device should be mounted securely using its integrated brackets to prevent movement during strong winds or heavy rainfall.

- Ensure the mounting surface is perfectly horizontal to guarantee accurate tipping bucket operation.
- Use appropriate fasteners (not included) to secure the base brackets to a pole or flat surface.

3.2 Wiring Instructions (RS485 Output)

The XS-RS04-RS485 model uses an RS485 interface for data communication. Connect the sensor to your data acquisition system or logger according to the following pin assignments:

- **Red Wire:** Power Supply Positive (V+)
- **Black Wire:** Power Supply Negative (GND)
- **Yellow Wire:** RS485 A
- **Green Wire:** RS485 B

The sensor requires a power supply of 5V to 24V DC. Ensure the power supply is stable and within this range.



Image 3: Wiring diagram for the RS485 output rain sensor. It illustrates the connections for Red (Power+), Yellow (RS485A), Green (RS485B), and Black (Power-) wires to a signal collection unit and battery.

4. Operating Instructions

Once properly installed and wired, the Veinasa XS-RS04-RS485 rain gauge operates automatically. Rainfall is collected by the funnel and directed into the tipping bucket mechanism. Each tip of the bucket corresponds to a specific amount of rainfall (e.g., 0.1mm), generating a pulse or signal that is transmitted via the RS485 interface.

- **Data Acquisition:** Connect the RS485 output to a compatible data logger, PLC, or monitoring system configured to receive RS485 signals.
- **Data Interpretation:** The connected system will count the tips and convert them into total rainfall

accumulation based on the sensor's resolution (e.g., 0.1mm per tip).

- **Rain Intensity:** The sensor can measure rain intensity within a range of 0.01mm to 4mm per minute.

5. Maintenance

Regular maintenance ensures the accuracy and longevity of your rain gauge.

- **Cleaning:** Periodically inspect and clean the rain collection funnel and the tipping bucket mechanism to remove leaves, debris, insects, or dirt that could obstruct the flow of water or impede the tipping action. Use a soft cloth and clean water.
- **Level Check:** Verify that the rain gauge remains level. If the mounting surface has shifted, re-level the device to maintain measurement accuracy.
- **Wiring Inspection:** Check all wiring connections for corrosion, damage, or loose contacts. Ensure cables are securely fastened and protected from environmental elements.
- **Obstruction Removal:** Ensure there are no new obstructions (e.g., growing vegetation) around the rain gauge that could affect rainfall collection.

6. Troubleshooting

- **No Data Output:**
  - Verify the power supply (5-24V DC) is connected correctly and providing adequate voltage.
  - Check all RS485 wiring connections (A, B, Power+, GND) for proper polarity and secure contact.
  - Ensure your data acquisition system is correctly configured for RS485 communication and the sensor's protocol.
- **Inaccurate Readings:**
  - Confirm the rain gauge is perfectly level. An unlevel installation can cause the tipping bucket to misfire.
  - Inspect the rain collection funnel and tipping bucket for any debris, dirt, or spiderwebs that might be blocking water flow or affecting the bucket's balance. Clean if necessary.
  - Ensure there are no nearby obstructions (e.g., overhanging branches) that could divert rain away from the gauge.
- **Tipping Bucket Not Moving:**
  - Check for physical obstructions preventing the bucket from tipping freely.
  - Ensure sufficient water is entering the bucket to trigger a tip (test with a measured amount of water).

7. Specifications

Parameter	Value
Model	XS-RS04-RS485
Resolution	0.1mm (0.2mm/0.5mm optional)
Rain Intensity Range	0.01mm ~ 4mm/min
Signal Output	RS485

Power Supply	5 ~ 24V DC
Material	304 Stainless Steel
Product Dimensions (Overall)	20.32 x 20.32 x 38.1 cm (8 x 8 x 15 inches)
Product Dimensions (Detailed)	Top Diameter: 200mm, Base Diameter: 210mm, Total Height: 307mm, Bucket Height: 270mm
Weight	3.63 kg (8 lbs)

Image 4: Detailed dimensional drawing of the rain gauge, showing key measurements such as height and diameter.

8. Application Scenarios

The Veinasa XS-RS04-RS485 Tipping Bucket Rain Gauge is suitable for a wide range of applications requiring accurate rainfall data.



Image 5: Examples of environments where the rain gauge can be utilized, including forestry, national defense, and hydrological stations.

9. Warranty and Support

For specific warranty information, please refer to the documentation provided at the time of purchase or contact your vendor directly. Veinasa provides technical support for its products.

- **Technical Support:** For assistance with installation, operation, or troubleshooting, please contact Veinasa customer service or visit the official Veinasa website for support resources.
- **Returns/Replacements:** Refer to your purchase agreement or the seller's return policy for details regarding returns or replacements.

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