

# Piezoelectric Rain Sensor User Manual



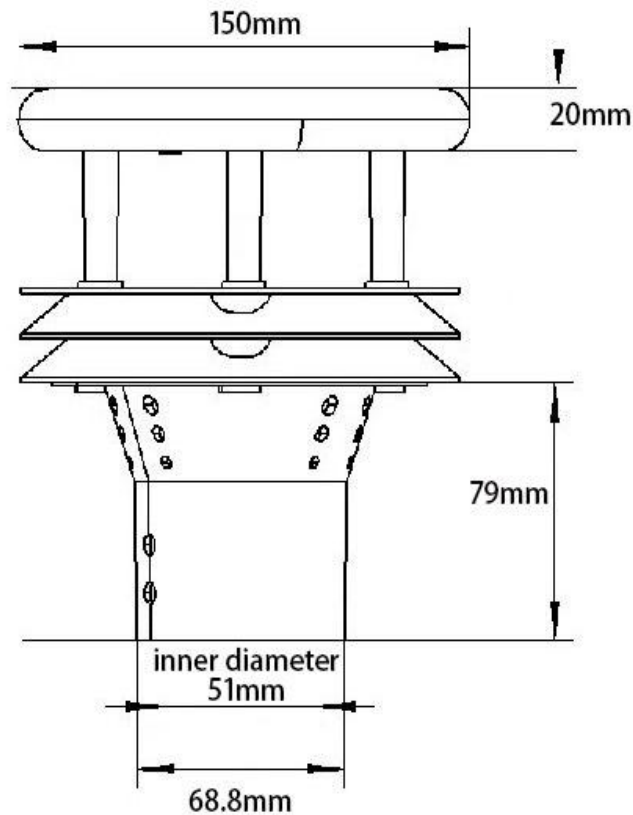
## 1. Product Features

This piezoelectric rain sensor uses a PVDF piezoelectric film as its rain-sensing element and employs an embedded AI neural network to distinguish raindrop signals, thereby preventing false triggers caused by interference from grit, dust, vibrations, and other factors.

## 2. Sensor Parameters

|                         |              |
|-------------------------|--------------|
| Measurement Type        | Rain         |
| Measurement Range       | 0-4 mm/min   |
| Measurement Accuracy    | ≤±4%         |
| Resolution              | 0.01 mm      |
| Sampling Frequency      | <1 s         |
| Communication Interface | RS485        |
| Communication Protocol  | MODBUS       |
| Power Supply            | 12 V DC      |
| Power Consumption       | 0.12 W       |
| Operating Temperature   | −40 to 85 °C |
| Operating Humidity      | 0 to 100% RH |

## 3. Sensor Dimension



## 4. Communication Protocols

### 4.1 Initial Sensor Configuration

Baud rate: 9600

Data bits: 8

Stop bits: 1

Parity bit: None

CRC16: Low byte first, high byte second

The sensor does not return an error code when it receives an invalid command (including CRC16 validation errors).

### 4.2 MODBUS Register Description

The number and length of registers are both defined in units of two bytes (16 bits), with the high byte first and the low byte second.

## Piezoelectric Rain Gauge Read-Only Registers

| Address | Operation | Content                                                                                                                                                                                                                                        | Notes |
|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 0x0000  | Read-only | The high-order bits of the cumulative rainfall, combined with the low-order bits of the cumulative rainfall, form a 32-bit unsigned number.                                                                                                    |       |
| 0x0001  | Read-only | The low-order bits of the cumulative rainfall, combined with the low-order bits of the cumulative rainfall, form a 32-bit unsigned number with a resolution of 0.01 mm. For example, 0x 0000 006F represents a cumulative rainfall of 1.11 mm. |       |

## Piezoelectric Rainfall Read/Write Register

| Address | Operation  | Content                                                                                                                   | Notes |
|---------|------------|---------------------------------------------------------------------------------------------------------------------------|-------|
| 0x0006  | Read/Write | Clear Cumulative Rainfall Flag: Set to 1 to clear the cumulative rainfall; this register automatically resets the device. |       |
| 0x0008  | Read/Write | Device Address: The factory default address is 201 (0xC9).                                                                |       |
| 0x0009  | Read/Write | Baud Rate: The value in the register is the actual baud rate divided by 10. For example: 960: 9600, 11520: 115200         |       |

## 5. Precautions

1. Ensure there are no obstructions within a 1-meter radius around the sensor to prevent water splashes from interfering with its operation.
2. Install the sensor away from sources of strong mechanical vibration.
3. The area directly above the sensor should be unobstructed so that raindrops fall directly onto the sensor; avoid secondary drips and continuous water flow impacts.