SUCH

# Piezoelectric Rain Sensor User Manual

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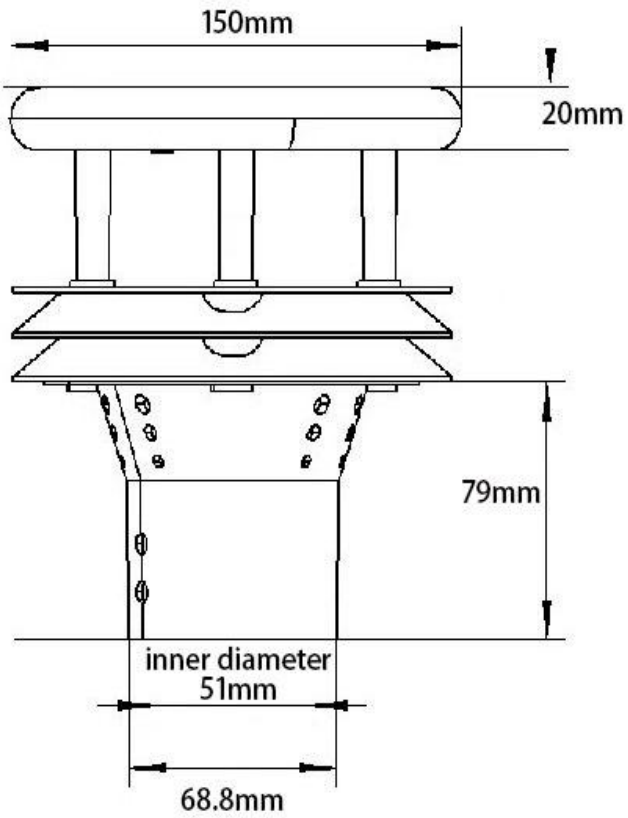
# 1. Product Features

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.