

# USER GUIDE FOR CDW-22A LEAF WETNESS SENSOR

CDW-22A-01-MN-10

SEP-2024

*This document is applied for the following products*

SKU	CDW	HW Ver.	1.0	FW Ver.	1.0
Item Code	CDW-22A	Leaf Wetness Sensor, 4-20mA RS485 0-5V 0-2V Output, ABS, 0-100% -40-+80°C			

## 1. Introductions

CDW-22A Leaf Wetness Sensor is an important tool for observing and studying leaf wetness, preventing pests and diseases, and spraying sprinkler control. The accurate measurement of the moisture content of the leaf surface can be used to monitor the trace moisture or ice crystal residue. The shape of the sensor is simulated by the blade, which can simulate the characteristics of the leaf surface, so that it can reflect the situation of the leaf surface more accurately. By measuring the variation of the dielectric constant of the upper surface of the blade, the mist, water vapor and ice can be measured.



## 2. Specification

Item	Technical Specification
Range	Wetness: 0-100% Temperature: -40-+80°C
Accuracy	Wetness: $\pm 3\%$ (0-50%), $\pm 5\%$ (>50%) Temperature: $\pm 0.5^\circ\text{C}$
Repeatability	$< \pm 3\%$ FS
Temperature Drift	$\leq 0.2\%$ FS/ $^\circ\text{C}$
Supply	5VDC, 12-24VDC
Output	4-20mA, 0-5V, 0-2V, RS485
IP Rating	IP65
Operating Temperature	-40°C-+80°C
Dimension	65*13*145mm
Storage	-40-70°C@20%-90%RH
Item	Technical Specification
Range	Wetness: 0-100% Temperature: -40-+80°C

# 3. Working Process

High precision thermistors or thermocouples are often used as temperature sensing elements. These components can quickly and accurately respond to temperature changes, and have good stability and reliability.

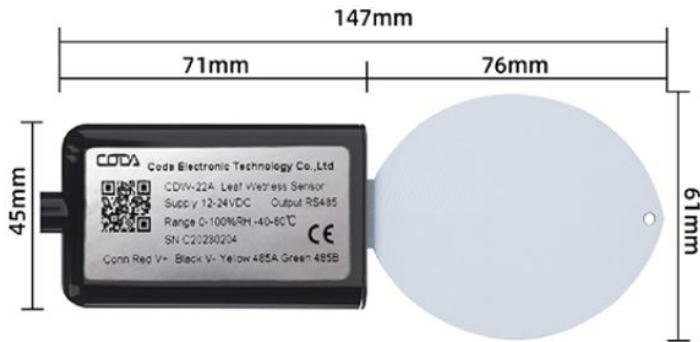
The shape of the probe can be customized according to different blade shapes, such as flat, needle, etc., in order to better fit the blade surface.



# 4. Electrical Connections

Cable	Current	Voltage	RS485
Red	V+	V+	V+
Green			RS485A
Black	V-	V-	V-
Yellow	Signal	Signal	RS485B

## 5. Dimensions



## 6. Installation



- Fixing method:

The sensor can be fixed to the blade surface using a special clip, binding or tape. The clamp should be soft and will not cause damage to the blade, and ensure that the clamping force is moderate, neither loosening the sensor, nor hurting the blade. The binding can be a choice of soft nylon tape or cotton thread, and the sensor is gently tied to the blade. Tape should be selected with moderate viscosity and no residual glue stains, and carefully pasted on the leaves to avoid affecting the normal physiological activities of the leaves.

- Installation Angle:

Ensure that the sensor is in full contact with the blade surface and the installation Angle is appropriate. In general, the sensing surface of the sensor should be parallel to the blade surface to ensure accurate measurement of the temperature and humidity of the blade surface. For blades of different shapes, the installation Angle can be adjusted appropriately so that the sensor can better fit the blade surface.

- Protective measures:

When installing the sensor, a layer of soft tissue paper or gauze can be placed between the sensor and the blade surface to prevent the sensor from directly touching the blade surface and causing damage. At the same time, a small protective cover can also be added to the outside of the sensor to prevent the impact of external factors such as rain and dust on the sensor.

# 7. Communication Protocol (MODBUS)

**Transmission mode:** MODBUS-RTU, **Baud rate:** 9600bps, **Data bits:**8, **Stop bit:**1, **Check bit:**no

**Slave address:**the factory default is 01H (set according to the need,00H to FFH)

7.1 The 03H Function Code Example: The Wetness and Temperature

**Host Scan Order(slave address:0xFE)**

01 03 00 00 00 02 C40B

**Slave Response**

01 03 04 00 15 00 FE 6A77

**Wetness:**(0015)H=(21)D,21/10=2.1%

**Temperature:**(00FE)H=(254)D,254/10=25.4℃

7.2 The 06H Function Code Example: Modify the slave address

**Host Scan Order (Changed the 01H to 02H):**

01 06 00 30 00 02 0804

**Slave Response:**

01 06 00 30 00 02 0804

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

**Note:**

1. All underlined is fixed bit;
2. The last two bytes is CRC check command.

**Note:** This product has been tested and complies with European CE requirements for EMC directive.

# 8. Support contacts:



Complies with applicable CE directives.

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