

Weather Monitoring Station

Model:TW-WMS-5001A

Product Overview

A weather station is a combination of instruments used to measure atmospheric conditions to help study the weather and climate of a particular location. Most weather monitoring stations will measure temperature, humidity, air pressure,



wind speed and direction, and rainfall, among others.

TW-WMS-5001A is a high-precision **outdoor environmental weather station**. Mainly used for industrial and agricultural meteorological environment monitoring. Its support structure is composed of a high-strength pole and various attachments through expansion screws, which can effectively resist strong winds and thunderstorms. Various **weather sensors** are installed on the top of the pole, which can accurately measure the current environment's temperature and humidity,

wind speed, wind direction, and rainfall etc.

How to Work?

A solar panel can be installed at a distance of 20 cm below the top to form a closed-circuit power supply system. This part can be flexibly selected according to your needs. Further down 5 cm is the waterproof box, which is equipped with an environmental monitoring host, which inquires the value of the sensors, and through the 4G GSM network uploads the data to our cloud platform. Customers can view the data via Mobile or PC remotely.

Applications

❖ **Extreme Weather Preparedness**

Major weather events like hurricanes and floods are growing in both frequency and intensity. Businesses and governments need to think more than ever about how severe weather might impact daily life and the continuity of their ability to deliver services.

❖ **Enhanced public and worker safety**

Keeping people safe is the number one imperative for anybody in a leadership position, whether it's in the public or private sector. Weather sensors can help employers understand when it's safe or unsafe for different kinds of work to take place and assist municipalities in making decisions for the good of the community.

❖ **Minimize business disruption**

If keeping people safe is the number one imperative for leaders, maintaining the flow of commerce to the highest degree possible is number two.

Parameters:

TW-WMS-5001A consists of parameters mentioned below:

- ❖ Wind Speed
- ❖ Wind Direction
- ❖ Rainfall
- ❖ Air Temperature
- ❖ Relative Humidity
- ❖ Air Pressure

Wind Speed

Wind Speed Sensor is designed with rugged components that stand up to hurricane-force wind yet is sensitive to a light breeze. It includes sealed bearings for long life.

Theory of Operation: The sensor's cup assembly consists of three cups mounted on a cup assembly hub. A shaft, which rotates on precision sealed ball bearings, connects the cup assembly to a magnet assembly. When the shaft is rotated, the turning magnet assembly causes a reed switch to close. It closes twice for every rotation of the shaft. The pulses produced by this closure are counted by the connected electronics.

Specifications:

Sensor Type	Three cups
Material	Control Head UV-resistant ABS
Wind Cups	Polycarbonate
Range	0-75 m/s
Accuracy	$\pm 5\%$
Dimensions	3 cup dia. 15 cm
Operating Temperature	- 40 ~ 75 ° C
Sensor Cable Length	2m



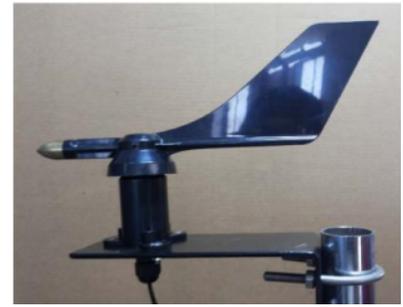
Wind Direction

Wind Direction Sensor is designed with rugged components that stand up to hurricane force winds, yet is sensitive to a light breeze. It includes sealed bearings for long life.

Theory of Operation: Wind direction is defined as the direction of the source of the wind flow measured in degrees from true north in a clockwise increasing angle. A potentiometer is mounted directly to the Vane shaft and rotates with the shaft. Changes in wind direction are sensed by a balanced vane assembly and this rotation moves the potentiometer. When a voltage (V_{in}) is connected across the potentiometer, the output from the wiper of the potentiometer is a voltage from 0 to V_{in} as a direct function of wind direction. This is converted to an analog signal by the internal electronics.

Specifications:

Sensor Type	Wind Vane Potentiometer Type
Material	Control Head UV-resistant ABS
Wind Cups	Polycarbonate
Range	0 to 360 deg
Accuracy	± 3%
Operating Temperature	- 40 ~ 75 ° C
Sensor Cable Length	2m



Rainfall

A tipping bucket rain gauge designed to record the rainfall. Rain enters the collector cone, passes through a debris-filtering mesh, and collects in one chamber of the tipping bucket. The bucket tips when it has collected an amount of water equal to the increment in which the collector measures (0.25mm). As the bucket tips, it causes a switch closure and brings the second tipping bucket chamber into position. The rain water drains out through the screened drains in the base of the collector.

Specifications:

Sensor Type	Tipping Bucket of specially formulated plastic for low surface tension
Material	High Impact Polypropylene, UV Inhibited
Resolution	0.25mm



Temperature, Humidity & Pressure

Our weather monitoring station is equipped with industry-leading sensors to deliver precise, real-time environmental data. Below are the key sensor specifications:

1. Temperature Sensor

- Measurement Range: -40°C to $+70^{\circ}\text{C}$
 - Accuracy: $\pm 0.3^{\circ}\text{C}$
 - Resolution: 0.1°C
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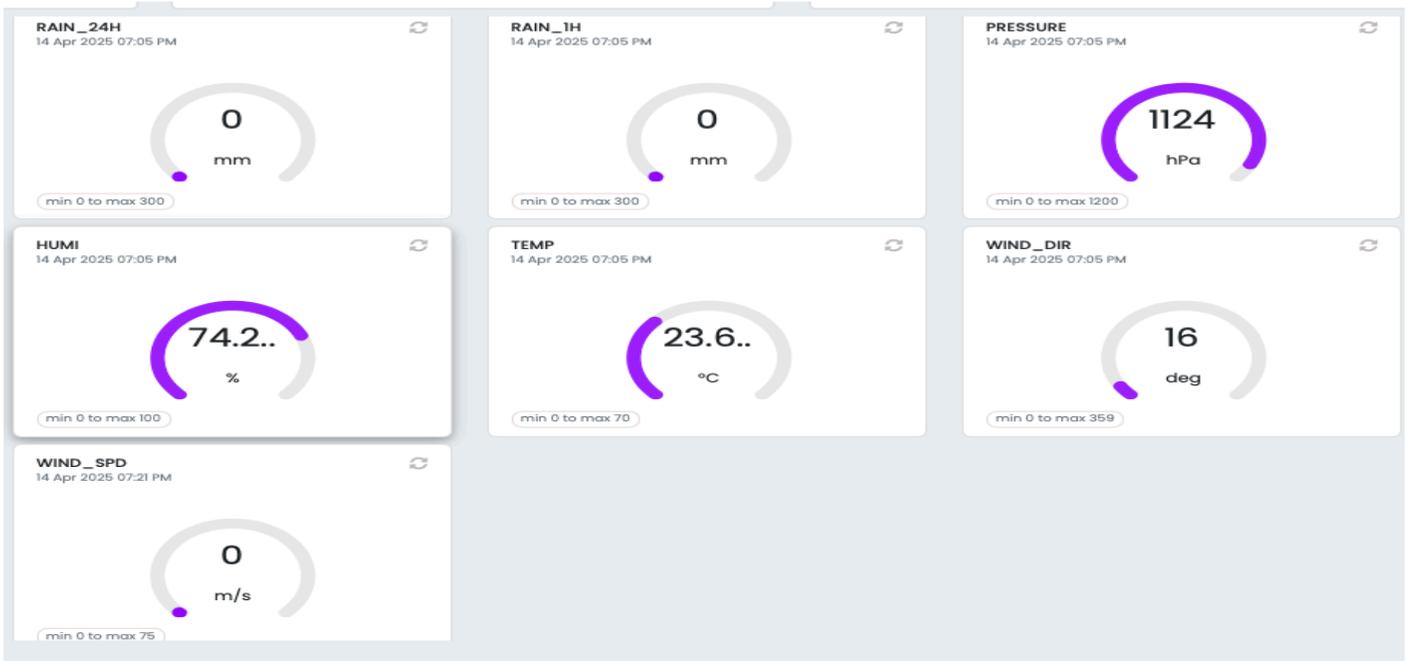
2. Humidity Sensor

- Measurement Range: 0% to 100% RH
 - Accuracy: $\pm 2\%$ RH
 - Resolution: 0.1% RH
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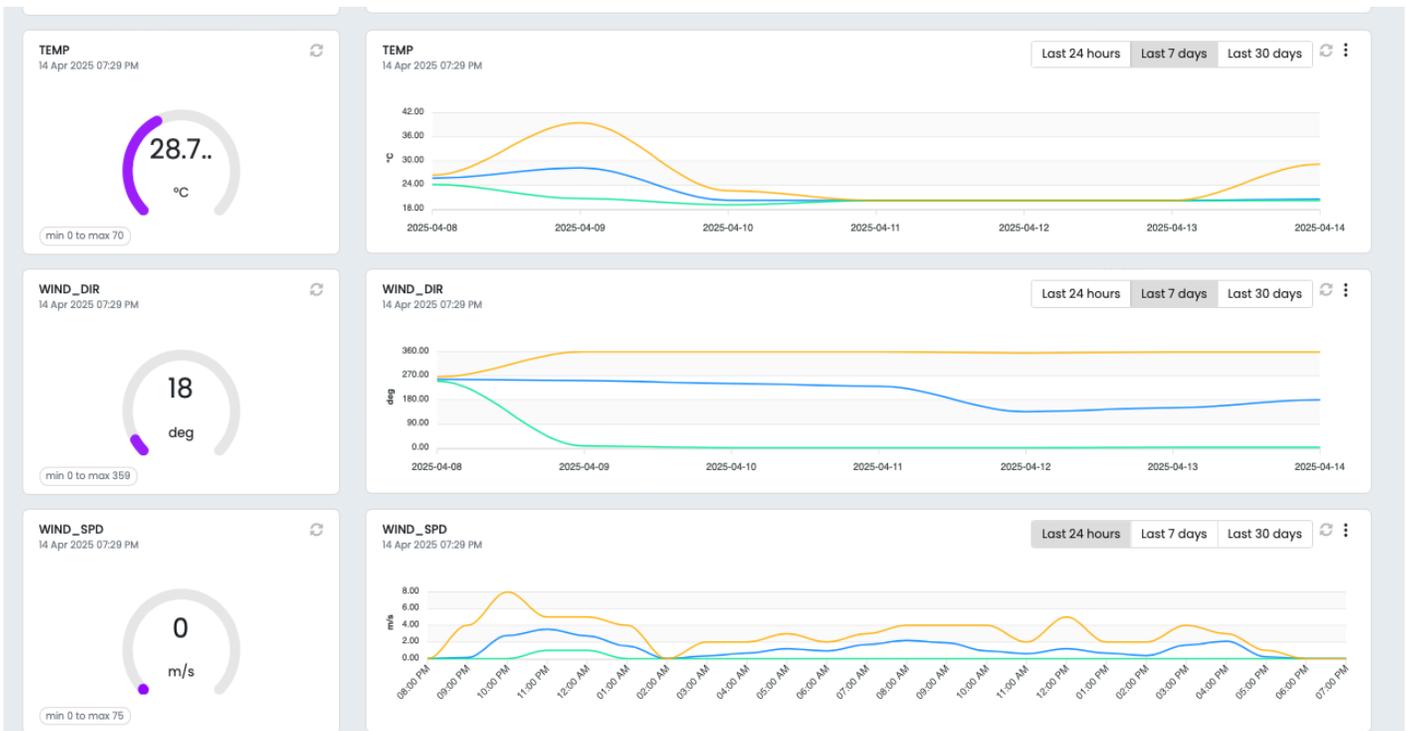
3. Barometric Pressure Sensor

- Measurement Range: 3000~1100 hPa
 - Accuracy: ± 1 hPa
 - Resolution: 0.1 hPa
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Real Time Online Monitoring on our Portal



Graphical Representation for Analysis



Additional Information

Solar Panel

- Maximum Power : 40Watt
- Weight: 4.0 Kg
- Dimension: 486 x 676 mm



Stainless Steel Tripod

- Material : SS304
- Pipe Thickness: 1.5 Inches Diameter
- Height from Ground: 6 Feet
- Foldable
- Extendable up-to desired height (Onsite Welding)



Battery

- Battery Type: VRLA
- Battery Capacity: 7Ah
- Operating Voltage: 12V
- Weight: 2.5Kg
- Dimension: 130x70x113 mm