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› Ecowitt WS90 7-in-1 Weather Sensor Instruction Manual

ECOWITT WS90BN

Ecowitt WS90 7-in-1 Weather Sensor Instruction Manual

Model: WS90BN | Brand: ECOWITT

1. INTRODUCTION

The Ecowitt WS90 7-in-1 Weather Sensor is an integrated outdoor sensor designed to collect accurate environmental data. This manual provides essential information for the proper setup, operation, and maintenance of your WS90 sensor.

Note: The WS90 weather sensor is a standalone sensor and cannot be used alone. It requires pairing with an Ecowitt Wi-Fi gateway, hub, or console (sold separately) for data viewing and configuration.

The sensor measures: temperature, humidity, wind direction, wind speed, light levels, UV levels, and rainfall data.

All-in-1 Integrated Weather Sensors

Collect temperature, humidity, wind direction and speed, light and UV levels



Figure 1: Diagram of the Ecowitt WS90 7-in-1 Weather Sensor, highlighting its components including the haptic rainfall sensor, solar panel, UV sensor, ultrasonic wind speed sensor, and temperature/humidity sensor.

2. SETUP

2.1 Unboxing and Initial Inspection

Carefully remove all components from the packaging. Verify that all items listed in the package contents are present and undamaged.

- WS90 7-in-1 Weather Sensor
- Instruction Manual
- Mounting accessories (screws, straps)
- USB Power Cord (for hub/console, not sensor)
- Ethernet Cable (for hub/console, not sensor)



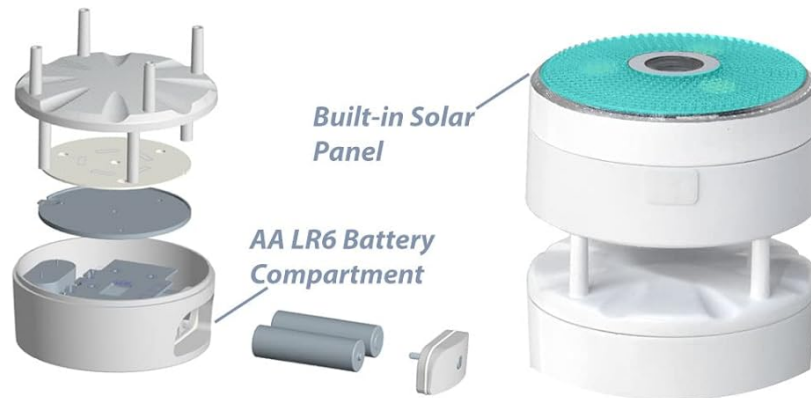
Figure 2: The Ecowitt WS90 7-in-1 Weather Sensor unit.

2.2 Power Supply

The WS90 sensor is equipped with a built-in solar panel for power autonomy and requires 2x AA batteries (not included) for backup power. Ensure batteries are inserted correctly into the battery compartment.

Dual Power Supply of Outdoor Sensor

Solar Power Autonomy & Backup Battery



Auto-Heater Function

DC 12V Adapter And Heating Power Cord Sold Separately

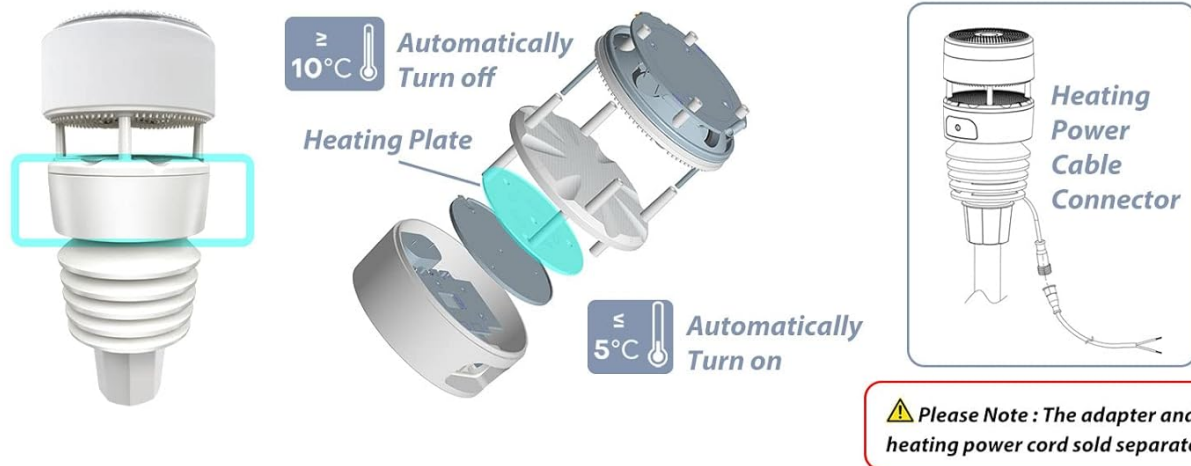


Figure 3: Illustration of the dual power supply system, showing the built-in solar panel and the AA LR6 battery compartment.

For cold climates, an optional DC 12V adapter and heating power cord (sold separately) can be connected to prevent snow accumulation and ensure continuous operation below 5°C .

2.3 Mounting the Sensor

Install the weather station on a 1-inch mounting tube or pole (not included). The fit should be snug to prevent movement, which is crucial for accurate sensor readings.

1. Secure the sensor to the mounting pole using the provided accessories.
2. Orient the sensor: Use a compass to align the "N" (North) marker on the sensor with true North. This ensures accurate wind direction readings.
3. Ensure the mounting location is free from obstructions that could interfere with wind, rain, or light measurements.

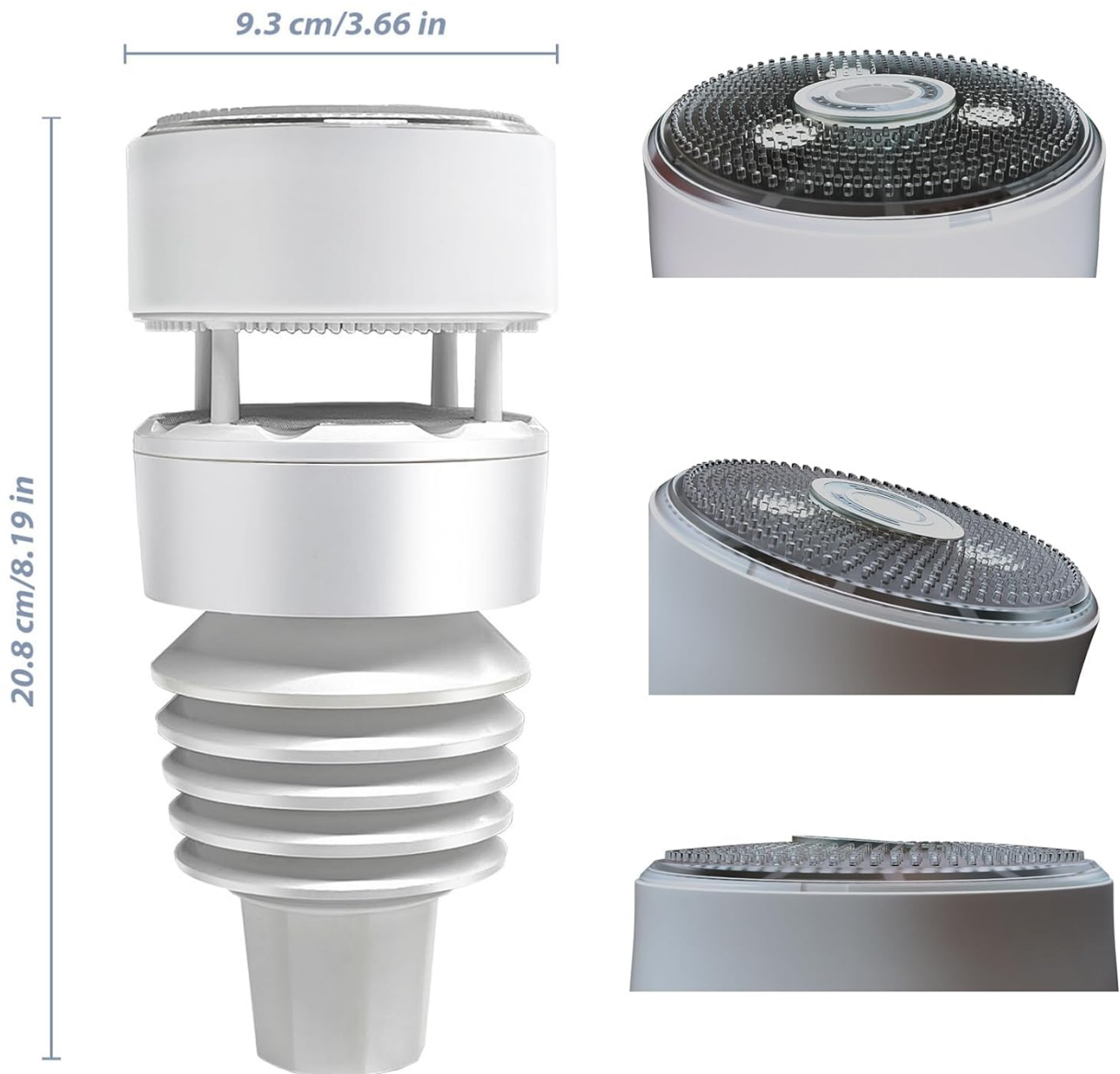


Figure 4: Examples of suitable installation locations for the WS90 sensor, such as a farm, garden, or driveway, emphasizing open areas for optimal data collection.

The sensor is designed to be robust and withstand various weather conditions, meeting Waterproof IPX5 Standards and made from Thermal Insulation Materials.

3. OPERATING THE SENSOR

3.1 Pairing with a Gateway/Console

The WS90 sensor transmits data wirelessly. To view live data, you must pair it with a compatible Ecowitt Wi-Fi gateway (e.g., GW2000, GW1100) or display console (e.g., HP2550/HP2560, WN1920/1980, WN1820/1821). Refer to your gateway/console's manual for specific pairing instructions.

Once paired and Wi-Fi configured, data can be viewed on the WS View Plus or Ecowitt APP.

3.2 Data Transmission and Online Services

The sensor has a long transmission range of up to 150m (500ft) with obstacles and up to 300m (1,000ft) in open space.

After Wi-Fi configuration with a hub/display console, the WS90 can upload sensor data to various internet-based weather services, including:

- Ecowitt Weather (ecowitt.net)
- Weather Underground
- Weather Cloud
- Weather Observation Website (WOW)
- Customized Websites (if compatible with Wunderground or Ecowitt protocol)

Ecowitt Weather (ecowitt.net) allows you to view data graphs and download historical records. Email alerts can also be set up for the Wittboy weather sensor.

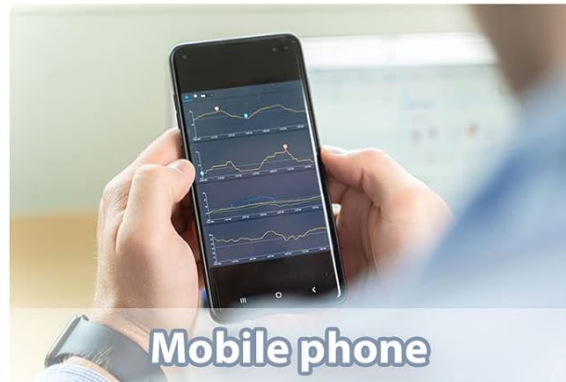


Figure 5: Overview of the Ecowitt Weather Station ecosystem, showing various sensors and hubs connecting to online platforms.

Explore the Environment around You



View and Share the Data Whenever and Wherever



You can view the live data on our free WS View Plus and Ecowitt APP after Wi-Fi configuration, and it supports uploading the weather data into the weather servers, such as WU/WOW/WeatherCloudy/Ecowitt.net. Also you can receive e-mail alerts sent upon customers defined condition.

Figure 6: Data from the WS90 sensor can be viewed and shared on computers and mobile phones via the WS View Plus or Ecowitt APP.

4. MAINTENANCE

4.1 Battery Replacement

The sensor uses 2x AA batteries as a backup power source. Monitor battery levels via the Ecowitt app or console. Replace batteries when low to ensure continuous operation, especially during periods of low sunlight.

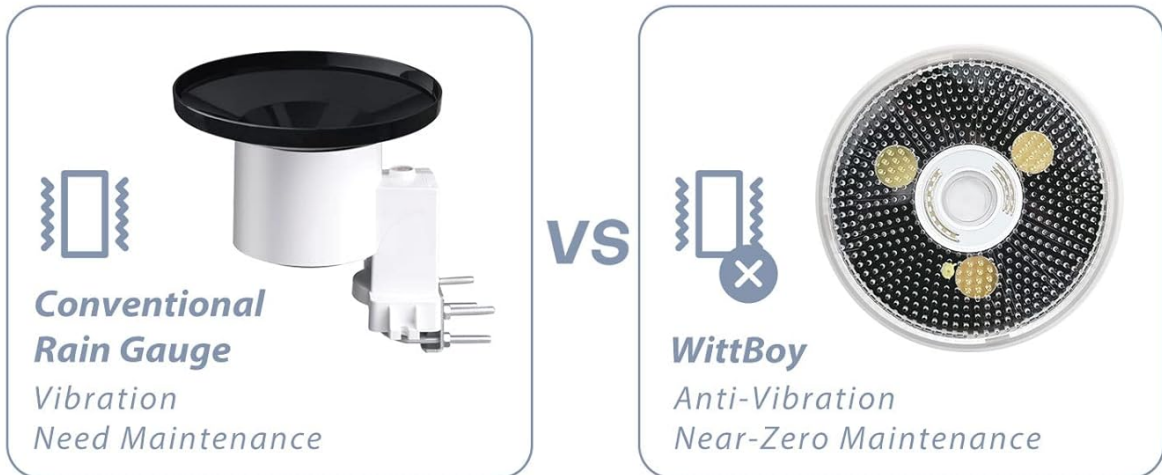
4.2 Cleaning the Sensor

Periodically inspect the sensor for dirt, debris, or insect nests that might obstruct the wind or rain sensors. Gently clean the exterior with a soft, damp cloth. Avoid using abrasive cleaners or harsh chemicals.

The Haptic Rainfall Sensor is designed for near-zero maintenance and is less affected by harsh weather conditions compared to traditional rain gauges.

Haptic Rainfall Sensor

NO Moving Parts Rain Gauge Design



Compared with traditional self-emptying rain gauge sensor, WS90 is equipped with haptic rainfall sensor on top of it, which converts the pressure of raindrops into accurate rainfall data, featuring rain detection and rain stop interpretation functions. This special sensor does not vibrate, it's even not affected by harsh weather conditions, and it's designed to keep working with accuracy in any context.

Haptic Rainfall Sensor

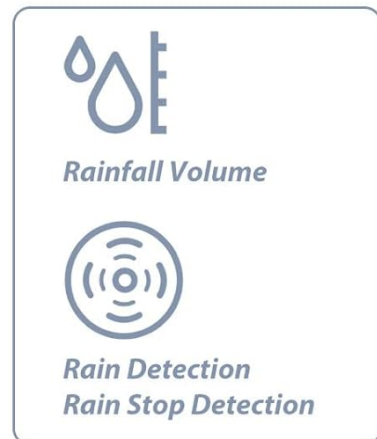


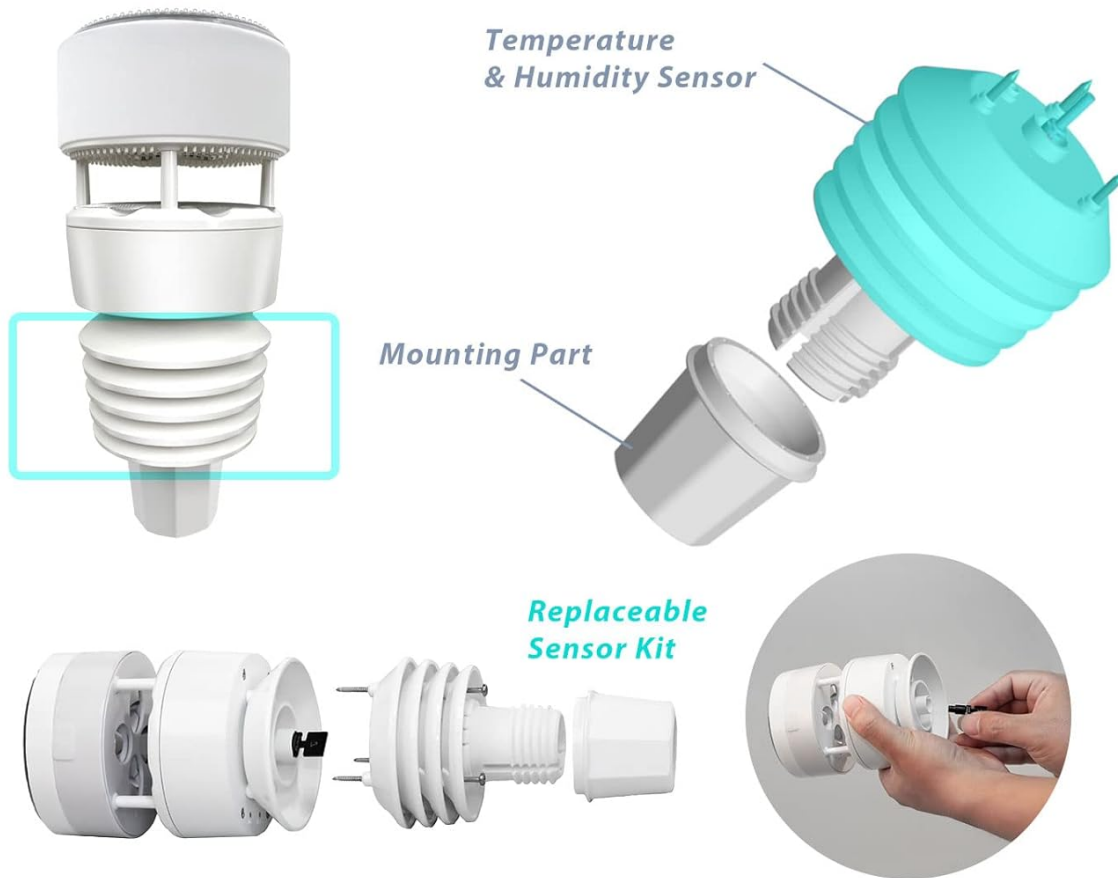
Figure 7: Comparison illustrating the Haptic Rainfall Sensor's design with no moving parts, offering anti-vibration and near-zero maintenance benefits over conventional rain gauges.

4.3 Sensor Component Replacement

The temperature and humidity sensor is a replaceable module, meeting IPX5 waterproof standards. This allows for easy replacement if needed, extending the lifespan of the main unit.

Compact and Built to Last

Not only compact, but the entire structure of the sensor is built to be robust and designed to withstand the test of time



The replaceable temperature and humidity sensor meet IPX5 waterproof standard.

Figure 8: Diagram showing the replaceable temperature and humidity sensor kit, emphasizing ease of maintenance.

5. TROUBLESHOOTING

Problem	Possible Cause	Solution
No data displayed on console/app.	Sensor not paired or out of range; low batteries; gateway/console not configured.	Ensure sensor is within range of gateway/console. Check and replace batteries. Verify Wi-Fi configuration of gateway/console.
Inaccurate rain data.	Raindrop size/wind speed affecting haptic sensor; sensor not level.	Ensure sensor is mounted level. For highly demanding accuracy, consider using WH40 rain gauge with WS90 (sold separately).

Problem	Possible Cause	Solution
Inaccurate wind direction/speed.	Sensor not oriented North; obstructions near sensor.	Re-orient sensor to true North. Clear any obstructions around the sensor.
Low battery alerts despite solar panel.	Insufficient sunlight; prolonged cloudy/rainy periods.	Ensure solar panel is clean and not obstructed. Consider using the optional DC 12V power supply in consistently low-light or cold conditions.

For further assistance, refer to the official Ecovitt support resources or contact customer service.

6. SPECIFICATIONS

Feature	Detail
Model Number	WS90BN
Sensor Type	7-in-1 Integrated Outdoor Weather Sensor (Temperature, Humidity, Piezo. Rain Gauge, Wind Speed & Direction, UV Light, Solar Panel)
Power Source	Solar Powered (built-in solar panel) or Battery Powered (2x AA batteries, not included)
Waterproof Rating	IPX5
RF Frequency	915 MHz
Transmission Range	Up to 150m (500ft) with obstacles, up to 300m (1,000ft) in open space
Connectivity	Requires Ecovitt Wi-Fi Gateway/Console (sold separately)
Dimensions	8.9 x 4.53 x 3.9 inches; 1.21 Pounds (Package Dimensions)
Material	Thermal Insulation Materials

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New Construction



Figure 9: Detailed dimensions of the Ecowitt WS90 sensor.

7. SUPPORT AND WARRANTY

7.1 Official Resources

For the most up-to-date information, firmware updates, and detailed FAQs, please visit the official Ecowitt website: www.ecowitt.com

You can also access the Ecowitt Weather server for data viewing and history records at ecowitt.net

7.2 Warranty Information

Ecowitt products typically come with a manufacturer's warranty. Please refer to the warranty card included with your product or visit the official Ecowitt website for specific warranty terms and conditions.

Protection plans are also available for purchase through authorized retailers to extend coverage beyond the standard manufacturer's warranty.

