ecowitt®

WN90LP Weather Station with RS485 Interface and Modbus Protocol

Ultrasonic Anemometer with Piezoelectric Rain Gauge, Light & UV, Thermo-hygro-barometer Sensors with RS485 Output

Manual

Model:WN90PL

https://s.ecowitt.com/TM6RWH

Table of Contens

1. Feature

- Piezoelectric rain gauge;
- Ultrasonic anemometer（start wind speed 0.3m/s);
- Barometric;
- Temperature;
- Humidity;
- Solar light intensity and UV index;
- Waterproof IPX5;

Note: There's a built-in thermostat inside the anemometer sensor to control the power supply for the heat plate, which will automatically turn on below 0℃ (30℉) and automatically turn off above 10℃ (50℉). To activate the heater by supplying an 12V/1A power to the sensor heating element for melting accumulated snow or ice, which can influence wind measurement accuracy significantly.

2. Overview

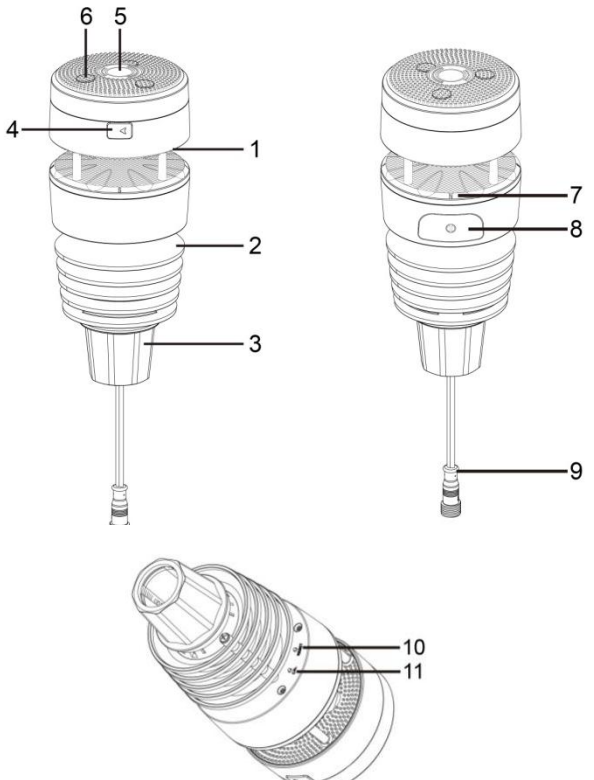
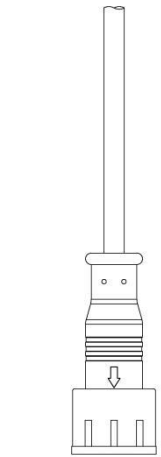
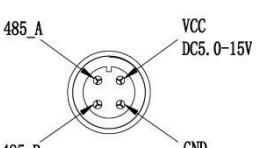
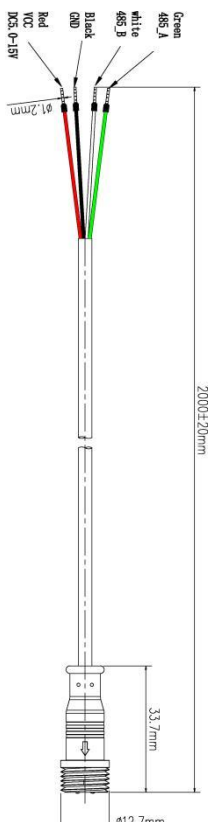


Figure 1: Sensor package assembly components

1. Ultrasonic wind sensor	7. NORTH alignment indicator
2. Temperature & humidity sensor	8. Battery compartment
3. Fixed Bolt (Mounting on a pole with 1 inch diameter)	9. RS485 cable connector
4. Micro USB port (only for firmware update, Factory use only)	10. Reset button
5. Light & UV sensor, LED indicator	11.Calibration button (factory use only)
6. Haptic Rainfall sensor	

Table: Sensor package assembly component list

Cable pin definition	Extension cable pin definition
 	

3. Setup Guide

3.1 Install batteries in sensor package

The device's power supply is RS485 power's line between 5.0 ~ and 12.0 V. However, you can install a backup battery that lasts about 120 hours. Upon power or pressing the "Reset" button, the LED indicator on the back of the sensor package (item 6) will turn on for 3 seconds and then flash once every 8.8 seconds, indicating sensor data transmission. You may have missed the initial indication if you did not pay attention. You can always press the reset button to start over. Make sure you see the flash once every 8.8 seconds.

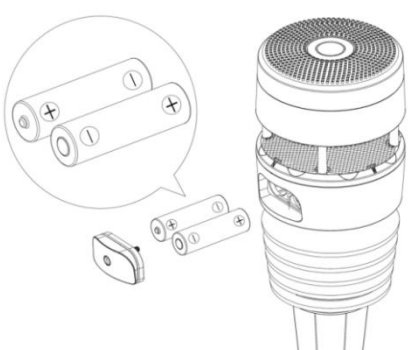


Figure 2: Battery installation diagram

Note: Please make sure the battery is inserted correctly for its polarity.

3.2 Mount ultrasonic anemometer with piezoelectric assembly

3.2.1 Before you mount

Before installing your outdoor sensor in the permanent location, we recommend operating the device for one week in a temporary location with easy access. This will allow you to check out all the functions, ensure proper operation, and familiarize yourself with the device's performance.

3.2.2 Mounting

- You can attach a pole with a diameter of 1.0 inch (not included) to a permanent structure and then attach the sensor package.

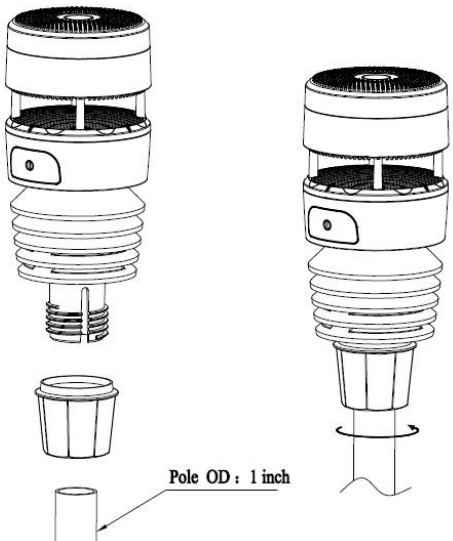


Figure 3: Sensor package mounting diagram6-1

The mounting pole needs to be vertical or very close to it. Use a level if it is required.

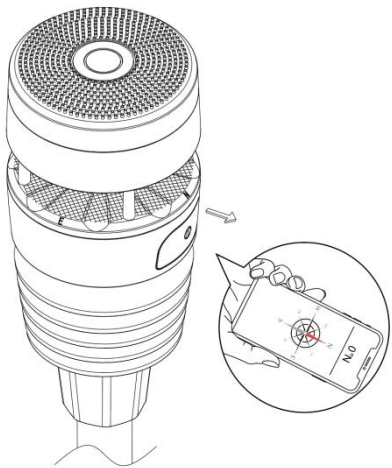


Figure 4 Facing North diagram

Now, you must align the whole package properly by rotating it on top of the mounting pipe as needed. Locate the arrow labeled “NORTH”. You must rotate the whole sensor package until this arrow points due north. To achieve proper alignment, it is helpful to use a compass (many cell phones have a compass application).

Note: In the Southern Hemisphere, it is not necessary to change the orientation to SOUTH as its solar

panel is a rounded type, and it is orientation-free for its charging capability.

As the final installation step, check and correct the north orientation again. Then, tighten the bolts. Do not over-tighten, but ensure strong wind and rain cannot move the sensor package.

3.2.3 Reset Button and Transmitter LED

In the event the sensor package is not transmitting, reset the sensor.

Press and hold the RESET BUTTON (item 11) to affect a reset: the LED turns on while the RESET button is depressed, and you can now let go. The LED should then resume as usual, flashing approximately once every 8.8 seconds.

4. Specification

Model	WN90LP
Name	Ultrasonic Anemometer with Piezoelectric Rain Gauge, Light & UV, Thermo-hygrometer Sensors RS485
Dimensions	93*93*208mm
Weight	498(g)

Material of Plastic Casing	ASA+PC、PC
Temperature Metering Range	-40°C to 60°C(-40°F to 140°F)
Temperature Metering Accuracy	±1°C (± 1.8°F)
Temperature Metering Resolution	0.1°C (0.2°F)
Humidity Metering Range	1%RH to 99%RH
Humidity Metering Accuracy	±5%RH
Humidity Metering Resolution	1%RH
Barometric Pressure Metering range	300 to 1100 hPa (8.85 to 32.5 inHg)
Barometric Pressure Metering accuracy	±5hPa
Barometric Pressure Metering resolution	0.1 hPa (0.01 inHg)
Rainfall Metering range	0mm to 9999mm

Rainfall Metering accuracy	<5mm/h, ±20%; 5mm/h to 50mm/h, ±10%; >50mm/h, ±20%
Rainfall Metering resolution	0.1mm
Wind speed Metering range	0m/s to 40m/s
Wind speed Metering accuracy	<10m/s, ±1m/s; ≥10m/s, ±10%
Wind speed Metering resolution	0.1m/s (starting speed > 0.5m/s)
Wind Speed Metering Interval	2s
GUST speed	Maximum value in the past 28 seconds
Wind direction Metering range	0° to 359°
Wind direction Metering accuracy	±15°
Wind direction Metering resolution	1°
Light Metering range	0Klux to 200Klux
Light Metering accuracy	±25%
Light Metering resolution	0.1Klux

UV Metering range	1 to 15
UV Metering accuracy	±2
UV Metering resolution	1
Data reporting Interval	8.8 seconds
RF Connection Frequency	920/915/868/433MHz (depending on local regulations)
RF Wireless Range (in open areas)	Over 150 meters (500 ft.)
Operating Temperature Range	-40°C to 60°C(-40°F to 140°F)
Protection Rating	IPX5
Power Supply	2*AA batteries (not included) or DC12V/1A Power adapter (not included)
Battery Life	120 hours

5. After-sales Service

Order Issues:

If you encounter any missing or incorrect shipments of Ecowitt products purchased, please reach out to the respective platform's customer service from the store you bought product for assistance.

Usage Inquiries:

If you have any issues related to product usage, feel free to contact our customer support team at support@ecowitt.com. We are dedicated to offering help and addressing any issues you might have.

6. Stay in Touch

Ask questions, watch setup videos, and provide feedback on our social media outlets. Follow Ecowitt on Discord, YouTube, Facebook and Twitter.