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
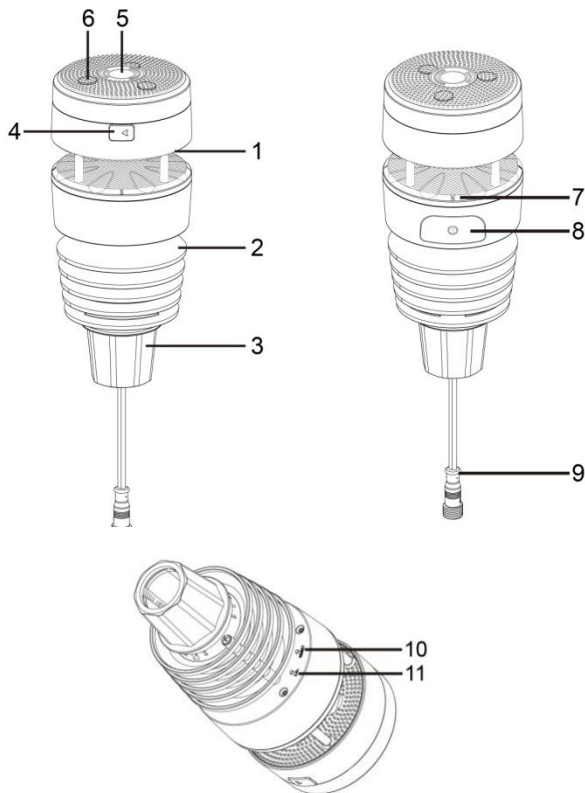
Figure 1: Sensor package assembly components

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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
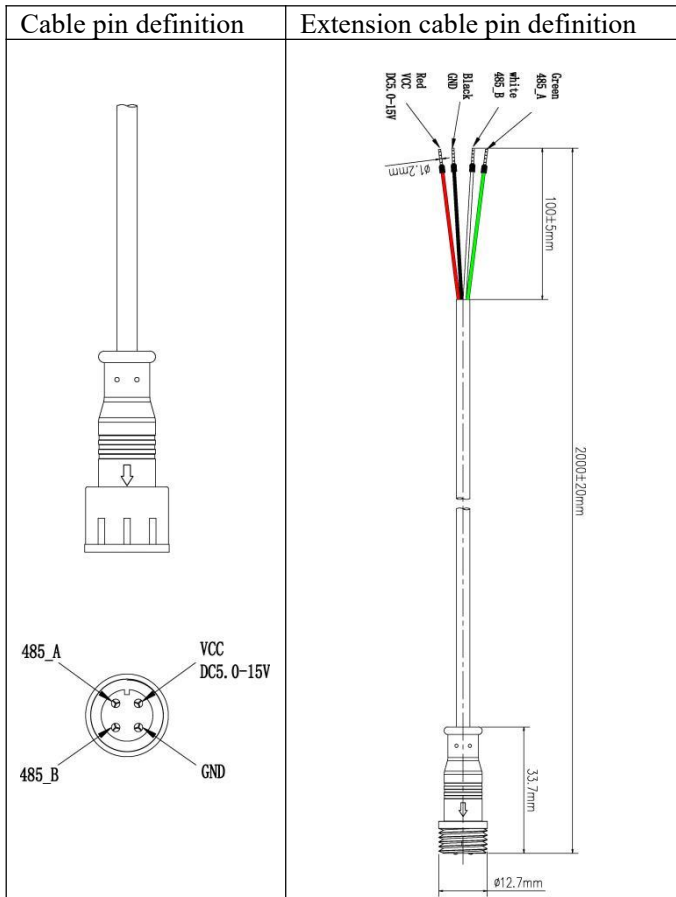
3. Setup Guide

3.1 Install batteries in sensor package

Open the battery compartment with a screwdriver and insert 2 AA batteries(not included) in the battery compartment, and press "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. If you did not pay attention, you may have missed the initial indication. You can always press the reset button to start over. Make sure you see the flash once every 8.8 seconds.
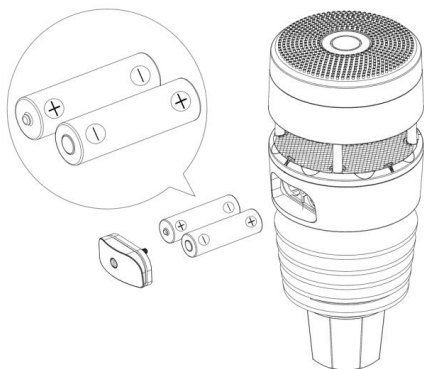
Figure 2: Battery installation diagram

Note: Please make sure the battery is inserted correctly for its polarity as the system needs its initial power from this backup battery to start up the system before solar panel charges up the accumulator and supply system power afterwards. when in high altitude area,during wintertime, sunshine time is short, we recommend Lithium batteries to be used for cold weather climates. Please avoid alkaline batteries, especially when internal heater is to be activated during cold and wet weather conditions as when heater activated, the trapped heat inside will warm up internally, and alkaline batteries are extremely susceptible to leakage when temperature is over certain limits.

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 of the functions, ensure proper operation and familiarize you with the device performance.

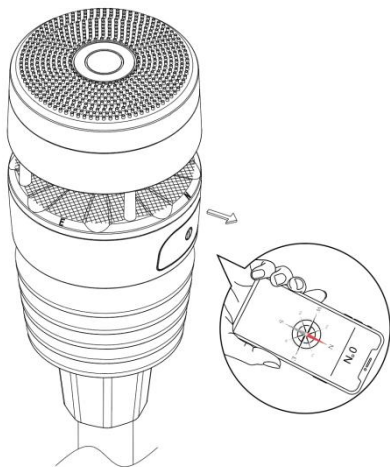## 3.2.2 Mounting

- You can attach a pole(not included) to a permanent structure and then attach the sensor package to it.
- The install hole will accommodate a pole diameter of 1.0 inch(pole not included).

Pole OD : 1 inch
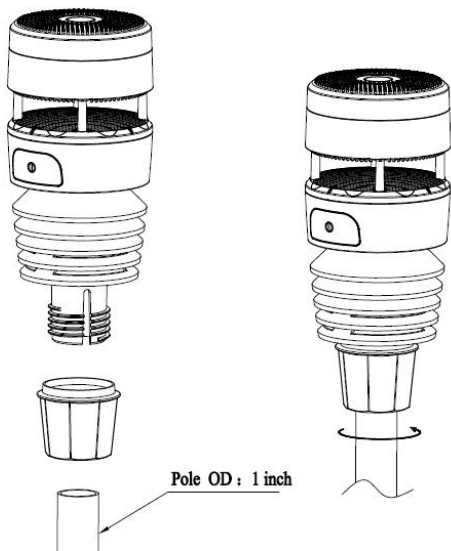
Figure 3: Sensor package mounting diagram6-1

Make sure the mounting pole is vertical, or very close to it. Use a level as needed.

Figure 4 Facing North diagram

Now you will need to align the whole package in the proper direction by rotating it on top of the mounting pipe as needed. Locate the arrow labeled "NORTH" that you will find on top of the connector tubeof the sensor

package (item 8). 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 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.

Make sure the mounting tube for the sensor package is installed vertically (use a level at 90-degree offsets around the tube). Adjust the mounting pipe as necessary. Next also make sure the mounting of the anemometer body on the pipe is level. If it is not, wind direction and speed readings may not operate correctly or accurately. Adjust the mounting assembly as necessary.

Make sure you check, and correct if necessary, the north orientation again, as the final installation step, and now tighten the bolts. Do not over tighten, but make sure strong wind and/or 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.

Using a bent-open paperclip, 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 normal, 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 adpter (not included)
Battery Life	1 Year

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:

For any issues related to product usage, feel free to contact our customer support team at support@ecowitt.com. We are committed to providing assistance and resolving any concerns you may 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.