

ecowitt[®]



WIRELESS SOLAR POWERED ANEMOMETER

WITH UV&LIGHT SENSOR

Model: WS68

Manual



<https://s.ecowitt.com/GFK9EV>

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1. Wireless Networking Introduction

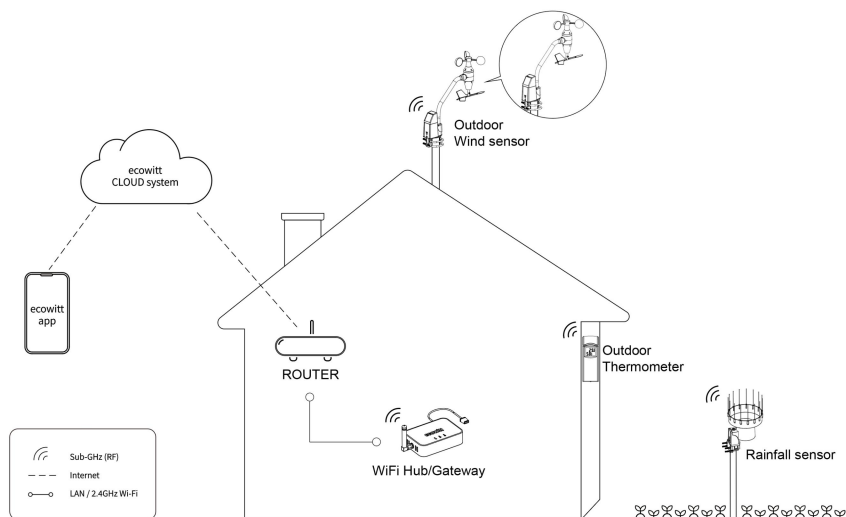


Figure 1

Thank you for purchasing this **Wireless Solar Powered Anemometer with UV & Light Sensor!**

This unit measures **wind direction, wind speed, wind gust, UV and light intensity** data.

Please note that this sensor **cannot be used alone**. The data can be received by an **Ecowitt Wi-Fi Gateway** (sold separately). Once the Wi-Fi configuration on the gateway has been completed, the data can be viewed using the **Ecowitt App / WS View Plus** mobile application.

To ensure optimal product performance, please read this manual carefully and keep it for future reference.

General Terms Used in the Manual:

Gateway:

Also known as a hub, it is a display-less console

Receiver:

Refers to the console.

RF: Radio frequency.

It refers to the ISM and SRD Sub-G (Industrial, Scientific and Medical and Short-Range Devices frequency bands below

1 GHz) for communicating between the console and its sensors.

This frequency is not the same as the 4G modem (LTE) or Wi-Fi working frequencies (2.4 GHz, 5 GHz). ISM/SRD bands are kept separate from

4G frequencies by national regulations to avoid interference. Typical

ISM/SRD frequencies are 915MHz(Americas), 868MHz(Europe), 433MHz(worldwide), 920MHz (Japan, Korea)

2. Pairing with a data receiver

You need to pair this data receiver with the Ecowitt Wi-Fi Gateway or consoles in order to view data on your Ecowitt app and receive email alerts on our weather server. Compatible models are listed in the table below.

Gateways			
			
GW1XXX	GW2000	GW30X0	WS6210

Table 1

Consoles				
				
HP25XX	HP3500	WS38XX	WS39XX	WN1920/1980

				
WN182X	WN1900/1910	HP3500	WN1700	

Table 2

- The WN1900/WN1910/WN1920/WN1980 can't display the light intensity and UV data(Uploading not affected).
- The WN182X/WN1700 is upload-only.

3. Instructions for Use

3.1 Part list

Open your weather station box and inspect that the contents are intact (nothing broken) and complete (nothing missing). Inside you should find the following.

QTY	Item Description
1	Outdoor Sensor Body with built-in: Wind Speed Sensor/ Wind Direction Sensor, Light and UV sensor, Solar panel
1	Wind speed cups (to be attached to outdoor sensor body)
1	Wind vane (to be attached to outdoor sensor body)
2	U-Bolts for mounting on a pole
4	Threaded nuts for U-Bolts (M5 size)
1	Metal mounting plate to be used with U-Bolts
1	Wrench for M5 bolts
1	User manual (this manual)

Table 3

If components are missing from the package, or broken, please contact customer service to resolve the issue.

Note: Battery for the outdoor sensor package is not included. You will need 1 AA size batteries, alkaline or Lithium batteries (**Lithium recommended** for colder climates).

3.2 Views and Sizes

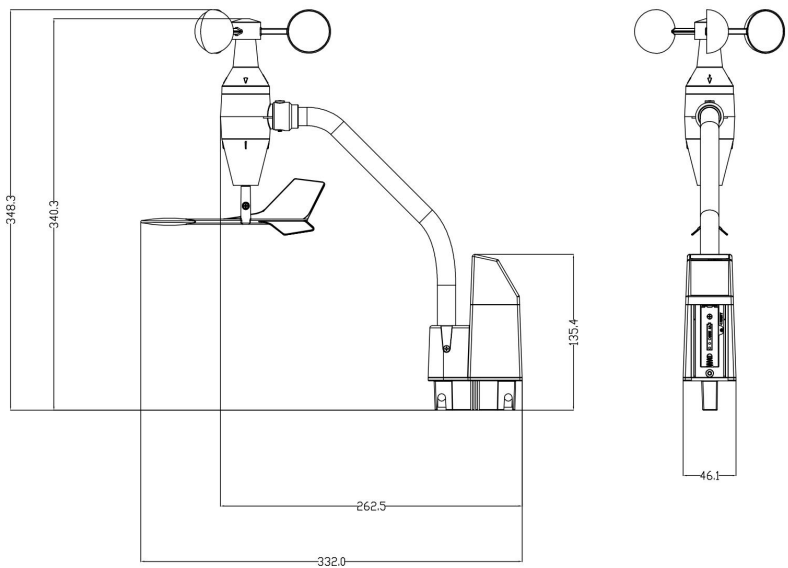


Figure 2

3.3 Overview

After full assembly, the WS68 will appear as follows.

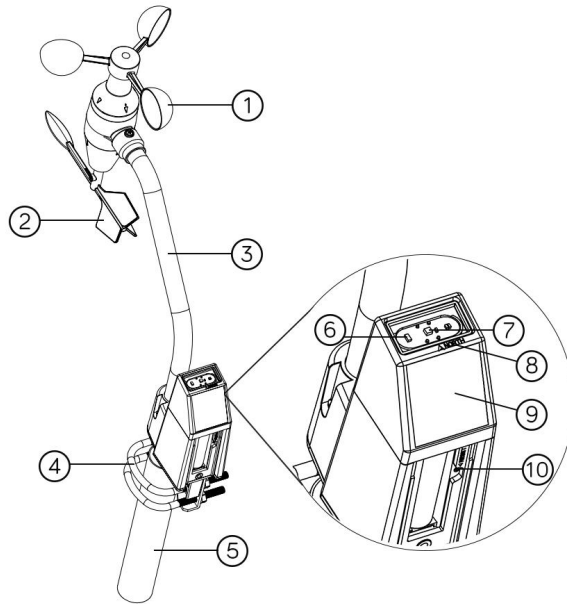


Figure 3 Sensor assembly components

1 Wind speed cups	6 LED (red) to indicate data transmission
2 Wind vane	7 Light sensor and UV sensor
3 Connection tube	8 NORTH arrow
4 U-Bolts	9 Solar panel
5 Mounting Pole(not included)	10 Reset button

Table 4: Sensor assembly detailed items

4. Assemble

4.1 Pre Installation Checkout

To complete assembly you will need a Philips screwdriver (size PH0) and a wrench (size M5; included in package).

Note:

We recommend assembling and testing all components of the system, including the Wi-Fi gateway or receiver console, in one location first to ensure proper functionality.

After testing, install the WS68 outdoor sensor in the desired location.

Please note that **movement during installation or relocation may temporarily affect wind readings. For best results, it is recommended not to connect the gateway or console to any Internet services until the sensor has been securely mounted and stable readings are confirmed.** This helps avoid uploading inaccurate data, which may be difficult to remove from Internet services later.

Attention:

Follow suggested order for battery installation (outdoor sensor first, console second)

4.2 Assemble all components

See Figure 3 to locate and understand all the parts of the outdoor sensor package once fully assembled.

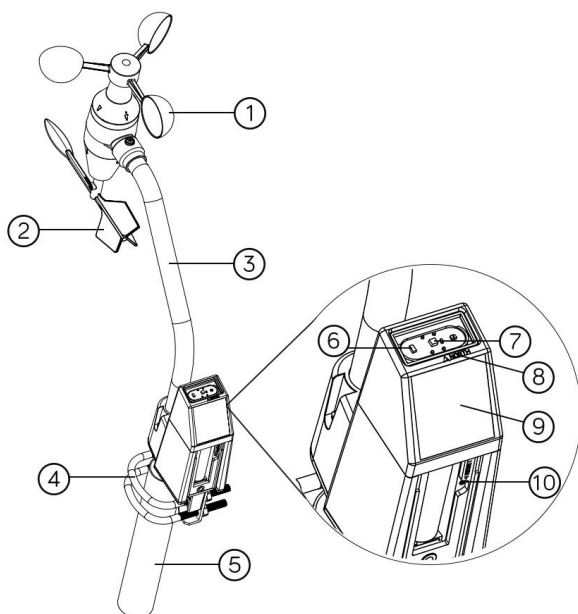


Figure 4 Sensor assembly components

1 Wind speed cups	6 LED (red) to indicate data transmission
2 Wind vane	7 Light sensor and UV sensor
3 Connection tube	8 NORTH arrow
4 U-Bolts	9 Solar panel
5 Mounting Pole(not included)	10 Reset button

Table 5: Sensor assembly detailed items

4.2.1 Install U-bolts and metal plate

Installation of the U-bolts, which are in turn used to mount the sensor package on a pole, requires installation of an included metal plate to receive the U-bolt ends. The metal plate, visible in Figure 4, has four holes through which the ends of the two U-Bolts will fit. The plate itself is inserted in a groove on the right bottom of the unit. Note that one side of the plate has a straight edge (which goes into the groove), the other side is bent at a 90-degree angle and has a curved profile (which will end up "hugging" the mounting pole). Once the metal plate is inserted, remove nuts from the U-Bolts and insert both U-bolts through the respective holes of the metal plate as shown in Figure 4.

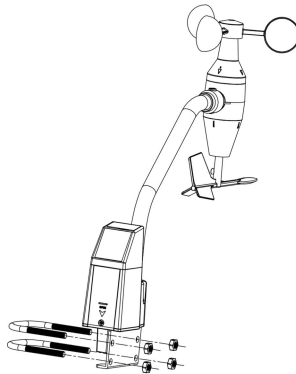


Figure 5 U-Bolt installation

Loosely screw on the nuts on the ends of the U-bolts. You will tighten these later during final mounting. Final assembly is shown in Figure 5.

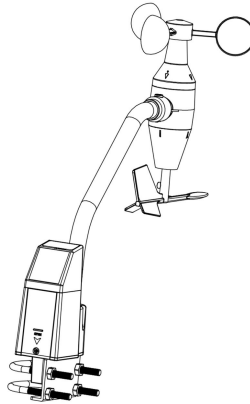


Figure 6 U-Bolts and nuts installed

The plate and U-Bolts are not yet needed at this stage but doing this now may help avoid damaging wind vane and wind speed cups later on. Handling of the sensor package with wind vane and speed cups installed to install these bolts is more difficult and more likely to lead to damage.

4.2.2 Install wind vane

Push the wind vane onto the shaft on the bottom side of the sensor package, until it goes no further, as shown on the left side in Figure 6. Next, tighten the set screw, with a Philips screwdriver (size PH0), as shown on the right side, until the wind vane cannot be removed from the axle. Make sure the wind vane can rotate freely. The wind vane's movement has a small amount of friction, which is helpful in providing steady wind direction measurements.

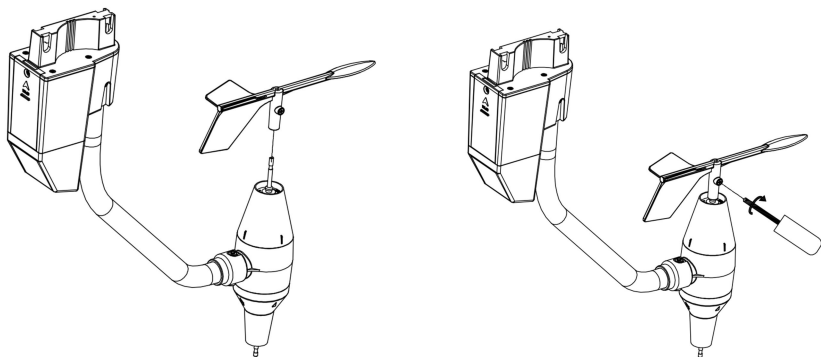


Figure 7 Wind vane installation diagram

4.2.3 Install wind speed cups

Push the wind speed cup assembly onto the shaft on the opposite side of the wind vane, as shown in Figure 7 on the top side. Tighten the set screw, with a Philips screwdriver (size PH0), as shown on the right side. Make sure the cup assembly can rotate freely. There should be no noticeable friction when it is turning.

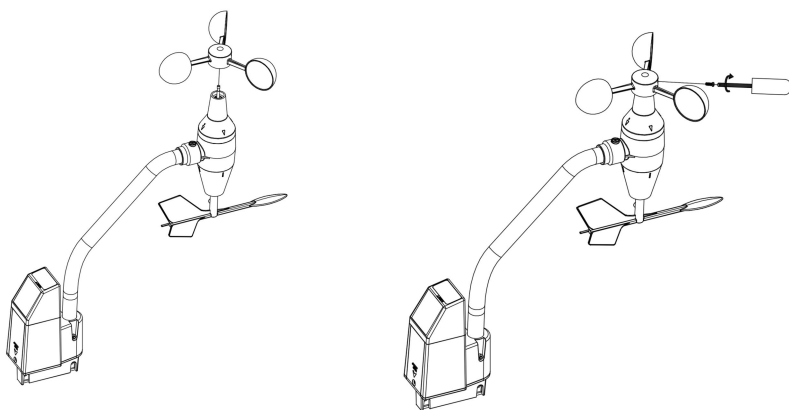


Figure 8 Wind speed cup installation diagram

5. Power up

5.1 Install Battery

Battery Usage Warnings	
Correct Installation	Insert the battery with the correct polarity. The system requires initial power from the backup battery before the solar panel takes over. If the LED does not light up or stays on permanently, check battery orientation and reinsert if needed. Incorrect installation may cause permanent damage.
Cold Weather Considerations	In winter or high-altitude areas with limited sunlight, the system depends more on the backup battery. Lithium batteries are recommended for better performance in cold conditions.
Battery Type Recommendations	Do not use rechargeable NiMH or NiCd batteries, as they are unsuitable. Lithium batteries are ideal for cold climates, while alkaline batteries work for most environments. Rechargeable batteries should never be used due to their lower voltage.

Table 6

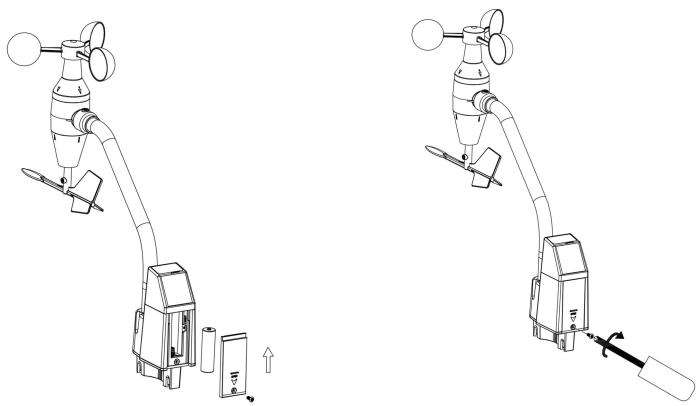


Figure 9 Battery installation diagram

Open the battery compartment with a screwdriver and insert 1 AA battery in the battery compartment. The LED indicator on the back of the sensor package (item 6) will turn on for 3 seconds and then flash once every 16.5 seconds indicating sensor data transmission. If you did not pay attention, you may have missed the initial indication. You can always remove the batteries and start over, but if you see the flash once every 16.5 seconds, everything should be OK.

5.2 Reset Button and Transmitter LED

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

Using a bent-open paperclip, press and hold the RESET BUTTON (item 10) 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 16.5 seconds.

6. View Online Data on WS View Plus/ Ecowitt App

6.1 Viewing data

Important Notice:

Due to the higher update frequency of the transmitter (every 16.5 seconds), while the gateway uploads only the latest data once per minute, the MAX and MIN values shown on the app dashboard may differ from those displayed on the local console. The local console calculates MAX and MIN values based on all received readings, whereas the gateway only reports the latest value within each upload interval, which may result in differences in the recorded MAX and MIN data.

After correct Wi-Fi configuration on the gateway, you can view all sensor data on the "Live Data" screen of the Ecowitt App/WS View Plus.

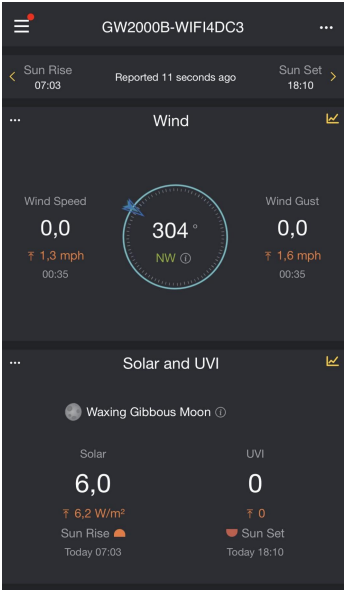


Figure 10 Ecowitt app Live Data Screen

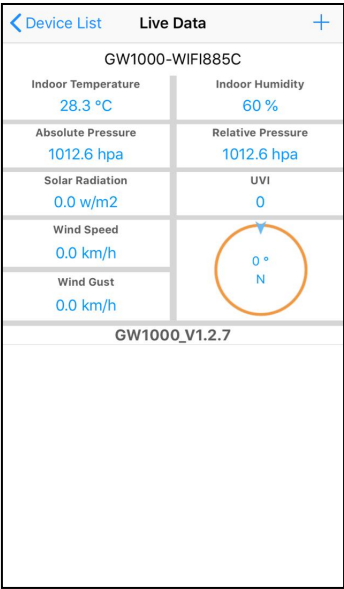


Figure 11 WS View Plus app Live Data Screen

Note:

1. This sensor data supports uploads to **WU/WeatherCloud/WOW**. The sensor history graph of your WU station ID can be viewed on the Ecowitt App/ WS View Plus.
2. You can also choose to upload the data to our own weather server: www.ecowitt.net, then you can view or download the history graph and records on the website.

6.2 Replace the old WS68 sensor

If you want to replace an existing **WS68 sensor** that has already been configured on a specific channel, please follow the steps below:

1. Open the **Sensor ID** page in the **Ecowitt App** and locate the Sensor ID of the old WS68 sensor.
2. Power off the old WS68 sensor, then power on the new WS68 sensor.
3. Tap **Re-register** on the Sensor ID page.

The new WS68 sensor will then be learned automatically, and the old sensor information will be replaced.

7. Mounting

7.1 Site Survey

Perform a site survey before installing the weather station. Consider the following:

- Ideally mounted at **32.8 feet (10 meters)** above ground level.
- Try to make the anemometer the highest object around 7 feet(2.76 meters) or more above the surrounding obstructions is best.
- Wireless Range. Radio communication between receiver and transmitter in an open field can reach a distance of up to 300 feet or 100 meter, providing there are no interfering obstacles such as buildings, trees, vehicles and high voltage lines. Wireless signals will not penetrate metal buildings. Under most conditions, the maximum wireless range is **100' or 30m**.

Radio Interference. Computers, radios, televisions and other sources can interfere with radio communications between the sensor array and console. Please take this into consideration when choosing console or mounting locations. Make sure your display console is at least five feet or 1.52 meter away from any electronic device to avoid interference.

7.2 Warnings and Cautions

- Any metal object may attract a lightning strike, including your weather station mounting pole. Never install the weather station in a storm.
- If you are mounting the weather station to a house or structure, consult a licensed electrician for proper grounding. A direct lightning strike to a metal pole can damage or destroy your home.
- Installing your weather station in a high location may result in injury or death. Perform as much of the initial check out and operation on the ground and inside a building or home. Only install the weather station on a clear, dry day.

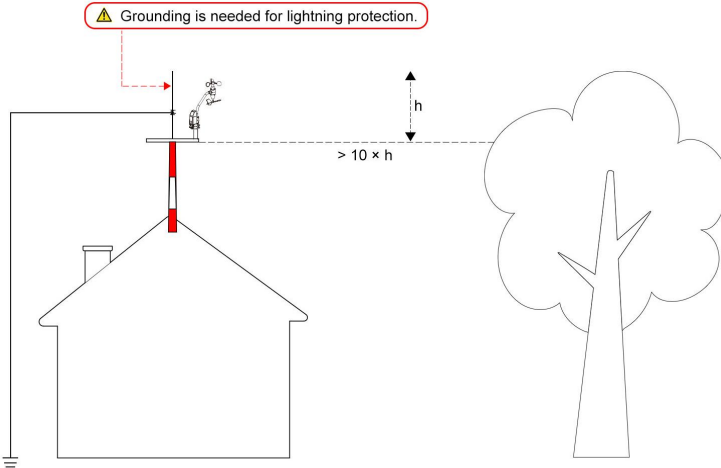


Figure 12 Grounding protection

Note:

Sensor damage, due to lack of grounding-protection against lightning ESD discharge, is not covered by warranty .

7.3 Best Practices for Wireless Communication

Wireless (RF) communication is susceptible to interference, distance, walls and metal barriers. We recommend the following best practices for trouble free wireless communication between both sensor packages and the console:

Electro-Magnetic Interference (EMI). Keep the console several feet away from computer monitors and TVs.

Radio Frequency Interference (RFI). If you have other devices operating on the same frequency band as your indoor and/or outdoor sensors and experience intermittent communication between sensor package and console, try turning off these other devices for troubleshooting purposes. You may need to relocate the transmitters or receivers to avoid the interference and establish reliable communication. The frequencies used by the sensors are one of (depending on your location): 433, 868, or 915 MHz (915 MHz for United States).

Line of Sight Rating. This device is rated at 300 feet or 100 meter line of sight (under ideal circumstances; no interference, barriers or walls), but in most real-world scenarios, including a wall or two, you will be able to go about 100 feet or 30 meter.

Metal Barriers. Radio frequency will not pass through metal barriers such as aluminum siding or metal wall framing. If you have such metal barriers and experience communication problems, you must change the placement of sensor package and or console.

The following table shows different transmission media and expected signal strength reductions. Each "wall" or obstruction decreases the transmission range by the factor shown below.

Medium	RF Signal Strength Reduction
Glass (untreated)	5-15%
Plastics	10-15%
Wood	10-40%

Brick	10-40%
Concrete	40-80%
Metal	90-100%

Table 6: RF Signal Strength reduction

7.4 Mounting on a pole

You can attach a pole to a permanent structure and then attach the sensor package to it (see Figure).

The U-Bolts will accommodate a pole diameter of 1-2 inches (pole not included).

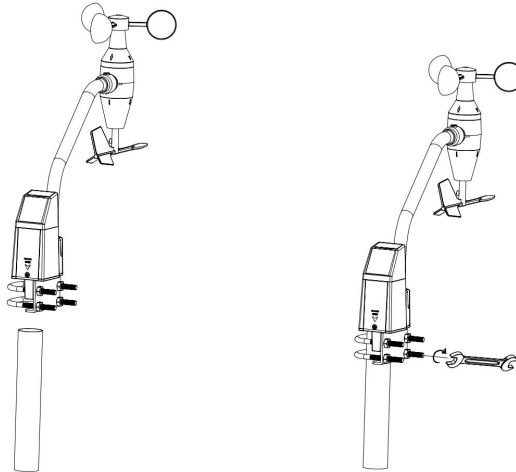


Figure 13 Sensor package mounting diagram

7.5 Vertical confirmation

1. Ensure the Mounting Pipe is Vertical

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

2. Place the Sensor Package on the Mounting Pipe

Finally, place the sensor package on top of the prepared mounting pipe. The U-Bolts should be loose enough to allow this but loosen the nuts as necessary. Once placed, hand tightens all four nuts, taking care to do so evenly. **Do not use a wrench yet!**

3. Align the Sensor Package (Orientation to NORTH)

For proper installation, rotate the entire WS68 sensor on the mounting pipe so that the arrow labeled "**NORTH**" on the top of the sensor package points toward true north (for Northern Hemisphere installations) or **toward true south** (for Southern Hemisphere installations).

Correct orientation is important to **ensure accurate wind direction readings and to prevent the solar panel from being shaded**, which could affect solar charging of the internal capacitors.

After installation in the **Southern Hemisphere**, the sensor requires a **180° calibration** to account for the reversed orientation. This calibration should be performed using the **Ecovitt App** following the app instructions.

Make sure the sensor package is installed **vertically**. A tilted installation may result in inaccurate wind speed or wind direction measurements. Once properly oriented, lightly tighten the mounting bolts with a wrench. Do not **overtighten**, but ensure the sensor package is secure against wind and rain.

8. Features

- Measures **wind direction, wind speed, wind gust, UV, and light intensity**.
- No **built-in display**; requires connection to a **Wi-Fi gateway** for setup. Once configured, live wind, UV, and light data can be viewed via the WS View Plus / Ecovitt App.
- Supports data uploads to Weather Underground (WU), WeatherCloud, and WOW. The history graph of your WU station ID can be viewed on the WU Dashboard via the WS View Plus / Ecovitt App.

- Wind and UV & light sensor calibration functions are available in the WS View Plus / Ecowitt App.
- Compatible with Ecowitt Weather Station display console (sold separately and compatible models see Section2); ensure that the outdoor sensor and console operate on the same frequency.

10. Specifications

Note: Out of range values will be displayed using "---" on WS View Plus/ Ecowitt App:

Outdoor sensor	Specification
Name	Outdoor Sensor Body with built-in: Wind Speed Sensor/ Wind Direction Sensor, Light and UV sensor, Solar panel
Dimensions With Bracket	332*131*365mm
Weight	458(g)
Material of Plastic Casing	ABS+PC
Wind speed Metering range	0–50 m/s (0–112 mph)
Wind speed Metering accuracy	<10m/s, $\pm 1\text{m/s}$; $\geq 10\text{m/s}$, $\pm 10\%\text{m/s}$
Wind speed Metering resolution	0.1m/s
Wind direction Metering range	0° to 359°
Wind direction Metering accuracy	$\pm 15^\circ$
Wind direction Metering resolution	1°
Wind Metering Inertval	2s
Gust wind speed	Maximum wind speed recorded in the past 16 seconds

Outdoor sensor	Specification
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	16.5 seconds
RF Connection Frequency	920/915/868/433MHz (depending on local regulations)
RF Wireless Range (in open areas)	Over 100 meters (330 ft.)
Operating Temperature Range	-40°C to 60°C(-40°F to 140°F)
Protection Rating	IP44
Built-in Solar panel	6V/3.5mA
Power Supply	1*AA batteries(not included)
Battery Life	1 year

Table 7: Outdoor sensor specification

* **GUST** is calculated as the maximum wind speed measured within the previous 16-second interval.

* The primary power source for the outdoor sensor is the solar panel. When available solar power (light over recent period) is insufficient, the batteries will be used. In outdoor climates that frequently have sustained temperatures below 0°C (or 32°F) the use of Lithium batteries is strongly suggested as these are performing better than Alkaline batteries under such circumstances.

11. Warranty Information

We disclaim any responsibility for any technical error or printing error, or the consequences thereof.

All trademarks and patents are recognized.

We provide a 2-year limited warranty on this product against manufacturing defects, or defects in materials and workmanship.

This limited warranty begins on the original date of purchase, is valid only on products purchased, and only to the original purchaser of this product. To receive warranty service, the purchaser must contact us for problem determination and service procedures.

This limited warranty covers only actual defects within the product itself and does not cover the cost of installation or removal from a fixed installation, normal set-up or adjustments, or claims based on misrepresentation by the seller, or performance variations resulting from installation-related circumstances.

12. FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a

residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body:
Use only the supplied antenna.

IC Caution:

English:

This device contains licence-exempt transmitter(s) /receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

13. Battery Care and Maintenance

When batteries of different brand or type are used together, or new and old batteries are used together, some batteries may be over-discharged due to a difference of voltage or capacity. This can result in venting, leakage, and rupture and may cause personal injury.

- Do not mix Alkaline, Lithium, standard, or rechargeable batteries.
- Always purchase the correct size and grade of battery most suitable for the intended use.
- Always replace the whole set of batteries at one time, taking care not to mix old and new ones, or batteries of different types.
- Clean the battery contacts and also those of the device prior to battery installation.
- Ensure the batteries are installed correctly with regard to polarity (+ and -).
- Remove batteries from product during periods of non-use. Battery leakage can cause corrosion and damage to this product.
- Remove used batteries promptly.
- For recycling and disposal of batteries, and to protect the environment, please check the internet or your local phone directory for local recycling centers and/or follow local government regulations.

14. Contact Us

14.1 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 where you bought the product for assistance.

Usage Inquiries:

Our product is continuously changing and improving, particularly online services and associated applications. To download the latest manual, and additional help, and 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.

14.2 Stay in Touch

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



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