Wireless Self-emptying Rain Gauge Sensor
Model: WH40

Contents

* Please scan the QR code to read English manual and keep it for future reference

* Bitte scannen Sie den QR-Code zudeutsche Anleitung lesen und aufbewahren füZukunftsbezug

* Si prega di scansionare il codice QR perleggi il manuale italiano e conservalo perReferenza futura

Instruction manuals

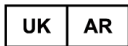**https://www.ecowitt.com/support/download/49**

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1. Introduction

Thanks for purchasing this WH40 wireless rain gauge sensor. This device measures rainfall rate, rainfall amount daily, weekly, monthly and yearly. The data can be streamed by Wi-Fi Gateway(sold separately) and can be viewed online Data on WS View Plus or Ecowitt App mobile application after the Wi-Fi configuration done.

To ensure the best product performance, please read this manual and retain it for future reference.

2. Unpacking

Open your rain gauge sensor box and inspect that the contents are intact (nothing broken) and complete (nothing missing). Inside you should find the following:

QTY	Item Description
1	Rain gauge sensor
1	U-Bolts set for mounting on a pole (2pcs)
1	Threaded nuts for U-Bolts set (M5 size) (4pcs)
1	Metal mounting plate set to be used with U-Bolts
1	Stainless steel filter (for rain collector)
1	User manual (this manual)

Table 1: Package content

If any component is missing from the package, or broken, please contact our Customer Service department to resolve the issue.

3. Features

Measures rainfall amount every 49 seconds.

Long wireless range, up to 300 feet (100 meters) in open areas.

When paired with a Wi-Fi Gateway:

- Monitor live sensor data on the Live Data page of the WS View Plus or Ecowitt App (requires the gateway and your phone is using the same Wi-Fi network):

  Rain Rate / Event / Day / Week / Month / Year

- Rain sensor calibration and customized initial rain value functions available on the WS View Plus or Ecowitt App

- View current rainfall data on WU Dashboard of the WS View Plus or Ecowitt App (requires to upload to Weather Underground first)

When paired with a Weather Station Console (WH5360/HP2553/HP3501):

- View rainfall data in real-time on the Display

- Rain sensor calibration and customized initial rain value functions available on the console (Note: The

WH5360 only has calibration function.)

When uploaded to Ecowitt Weather Server:

- View current rainfall data & history records & graph on the website
- Set and receive email alerts from the server
- Sensor name can be edited on the website
- Remote monitoring with smart phone, laptop, or computer by visiting the website

4. Setup Guide

4.1 Site Survey

Location of the sensor is paramount to good data collection. Abbreviated instructions follow, but for a detailed reference, see:

https://www.weather.gov/media/epz/mesonet/CWOP-Siting.pdf.

Perform a site survey before installing the rain sensor. Consider the following:

- Ideally mounted at a height of 4 to 6 feet, or 1.5 to 2 meters above the ground.
- Ideally located at a horizontal distance of 4 times the height, above the rain gauge, of the nearest obstruction.

- Ensure the rain gauge is mounted level to the ground, away from any horizontal surface that can introduce rain-splashing or surrounding snow buildup.

   Note: If the rain gauge sensor was mounted less than 3.3 feet or 1 meter above the ground, the electromagnetic waves would be absorbed by the earth when raining. Which may cause inaccurate rainfall data transmitting.

4.2 Rain Gauge Sensor Set Up and Installation

See Figure 1 to locate and understand all the parts of the rain gauge sensor once fully assembled.
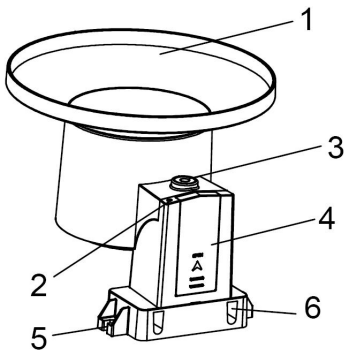
Figure 1: Sensor assembly components

1	Rain collector top	4	Battery compartment door
2	LED Indicator	5	Surface installation screw hole
3	Bubble level	6	U-bolt installation hole

Table 2: Sensor assembly detailed items
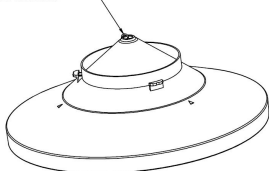
4.2.1 Install rain gauge filter

There's a stainless steel filter included in the package. It's aimed to stop leaves or bird's dropping to avoid the obstruction of the cone hole. The installation is as simple as the below figures show:
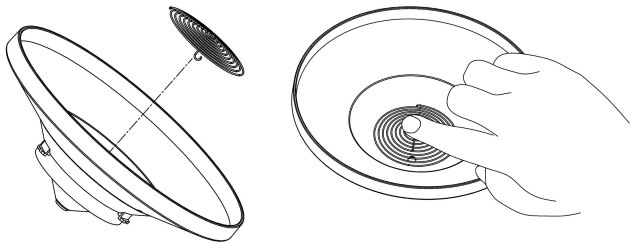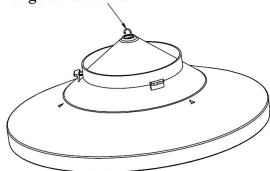

Hook the filter hook on the edge of the rain collector to install the filter(as the figure 2 shows on the left).

Take out the filter hook from the edge to uninstall the filter(as the figure 2 shows on the right).

Hook the filter hook on the edge to install

Take out the filter hook from the edge to uninstall

Figure 2: Rain gauge filter in/un-installation diagram

4.2.2 Install rain collector top

Align the rain collector top with the rain bucket, pay attention to the lock groove position as shown on the left side in Figure 3. Next, lock the top clockwise to the lock groove position, as shown on the right side of the figure, until it comes to a stop and the top cannot be removed from the bucket. Failure to do this may cause the collector top to blow away in strong winds!
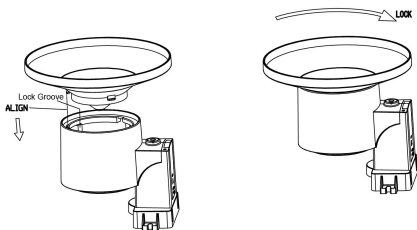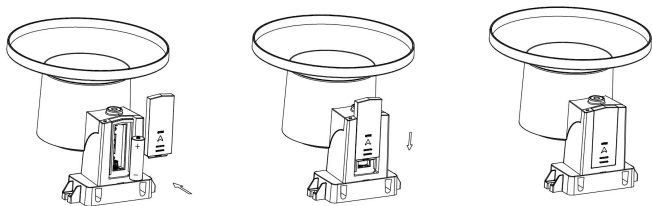

Figure 3: Rain collector top installation diagram

4.2.3 Install Batteries in rain gauge sensor

Remove the battery door on the back of the sensor by sliding it in the direction of the arrow. Insert one AA battery as described and put compartment door back and slide it in the opposite direction to lock.

Figure 4: Rain gauge sensor battery installation diagram

The LED indicator on the top of the battery door (item 2) will turn on for 4 seconds and then flash once every 49 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 49 seconds, everything should be OK.

Note: If no LED light up or is lighted permanently, make sure the battery is inserted the correct way or a proper reset is happened. Do not install the

batteries backwards. You can permanently damage the outdoor sensor.

Lithium batteries are recommended for the best performance. We do not recommend rechargeable batteries. They have lower voltages, do not operate well at wide temperature ranges, and do not last as long, resulting in poorer reception.
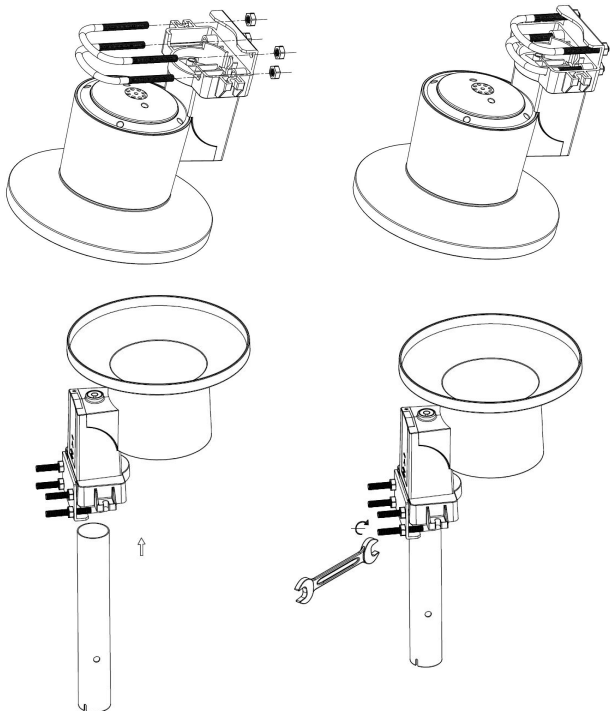
5. Mounting

Before you mount

Before proceeding with the outdoor mounting detailed in this section, you may want to skip to WIFI configuration instructions in section 6 and onwards first, while you keep the assembled outdoor sensor package nearby (although preferably not closer than 5 ft. from the gateway). This will make any troubleshooting and adjustments easier and avoids any distance or interference related issues from the setup.

After WIFI configuration is completed and everything is working, return here for outdoor mounting. If issues show up after outdoor mounting they are almost certainly related to distance, obstacles etc.
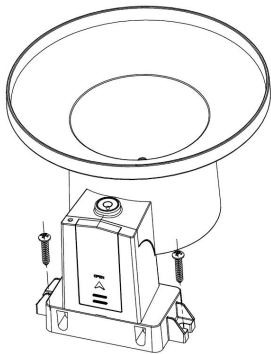
Mount with U-bolts

The mounting assembly includes two U-Bolts and a
bracket that tightens around a 1" to 2" diameter pole (not
included) using the four U-Bolt nuts.

Note: Use the bubble level beside the rain sensor as a guide to verify that the sensor is leveled.

Mount with screws

The mounting assembly also includes two screws for installation on a flat place.

Note: Use the bubble level beside the rain sensor as a guide to verify that the sensor is leveled.

Best Practices for Wireless Communication

Wireless communication is susceptible to interference, distance, walls and metal barriers. We recommend the following best practices for trouble free wireless communication.

1. **Electro-Magnetic Interference (EMI)**.

Keep the console several feet away from computer monitors and TVs.

2. **Radio Frequency Interference (RFI).**

If you have other 915/433/868 MHz devices(same frequency with your device) and communication is intermittent, try turning off these other devices for troubleshooting purposes. You may need to relocate the transmitters or receivers to avoid intermittent communication.

3. **Line of Sight Rating.**

This device is rated at 300 feet(100 meters) line of sight (no interference, barriers or walls) but typically you will get 100 feet(30 meters) maximum under most real-world installations, which include passing through barriers or walls.

4. **Metal Barriers.**

Radio frequency will not pass through metal barriers such as aluminum siding. If you have metal siding, align the remote and console through a window to get a clear line of sight.

6. Wi-Fi Configure with gateway

This rain sensor doesn't has a display function and you need to use our WS View Plus or Ecowitt App to view the rainfall data on your mobile application after pairing this device with our Wi-Fi Gateway(sold separately).

Note: If you are testing the setup with the rain sensor nearby and indoor, you may want to consider connecting to Wi-Fi, but not yet configuring any of the weather services. The reason is that the rainfall bucket may be tripped during handling, causing rain to register while it may not actually have been raining. One way to prevent this is to follow all instructions, except to use an incorrect password, on purpose! Then, after final outdoor installation, come back and change the password after clearing data history. That will start uploading to the services with a clean slate.

6.1 Pair with Gateway

If the WiFi Gateway has been in operation, and you have never had any rain sensor setup before, just power up rain sensor and the WiFi Gateway will pick rain data automatically. You can check that on the Live Data page of the WS View Plus or Ecowitt App.

If you want to use a new sensor to replace the old one, please try the following:

1. Open the Sensor ID page on the WS View Plus or Ecowitt App, and find your old sensor ID.
2. Power off the old sensor and power on the new sensor.
3. Click Re-register on the Sensor ID page.

Then the new sensor will be learned and the old sensor will be erased.

6.2 Wi-Fi Connection for the Gateway

For this part, please refer to the manual of the Wi-Fi gateway.

Any question, please contact the customer service.

7. View Online Data on WS View Plus or Ecowitt App

When the Wi-Fi configuration is done, you can view the live data of your rain sensor on the WS View Plus or Ecowitt App.

Please download WS View Plus/ Ecowitt App from Google Store/ Apple Store/ Website.

User manuals can be found by scanning the QR code below.
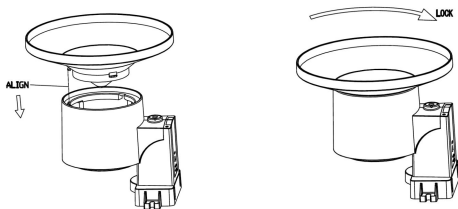
8. Maintenance

The following steps should be taken for proper maintenance of your station

Clean Rain Gauge

Check the rain gauge every 3 months. Rotate the funnel counterclockwise and lift it up. Clean the funnel and bucket with a damp cloth to remove any dirt, debris and insects. Spray the array lightly with insecticide, if there's a bug infestation.
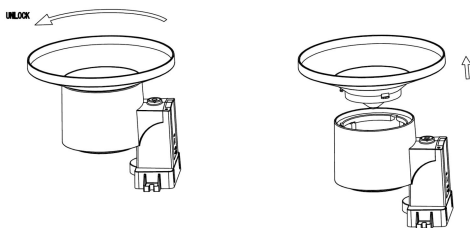
Replacing batteries regularly

Batteries of the outdoor sensor array should be replaced every 1-2 years. In applications where data dropouts cannot be tolerated, check the batteries every 3 months and apply a corrosion preventing compound (not included) on the battery terminals for protection.

Prevent snow build up

In snowy environments, use anti-icing silicon spray on the top of the rain collection top, to prevent snow build up.

9. Specification

Transmission distance in open field: 100m(300 feet)

Frequency: 915/868/433MHz (North America: 915MHz; Europe: 868MHz; Other areas: 433MHz)

Rainfall measuring range: 0--6000mm ; Accuracy: ±5%

Sensor reporting interval: 49 seconds

Note: The frequency is fixed and could not be changed.

Power consumption

Rain sensor: 1xAA Alkaline batteries (not included)

Battery life: Minimum 12 months

10. 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 1-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.