Wireless Self-emptying Rain Gauge Sensor with Bird Spike

User Manual
Model No. WH40H

https：//s.ecowitt.com/ANYW65

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1. Introduction

Thanks for purchasing the ECOWITT WH40H rain gauge sensor. Compared with the traditional rain gauge sensor WH40, this device heightens the rain collector top by 3.5cm. This improvement ensures that WH40 catches raindrops precisely, especially when heavy rain, making the rainfall data more accurate. Not only is the rain collector heightened, but WH40H is also featured by the 15 bird spike holes design on the rain collector top. It comes with 15 bird spikes that can prevent the birds from nesting in the rain collector. Besides, the WH40H's rain bucket adopts weatherproof new material, strengthening the ability to UV resistance.

2. Getting Started

2.1 Package List

- 1 x WH40H Rain Gauge Sensor
- 2 x U-Bolts Set for Mounting on a Pole (for Mounting on the Pole)
- 4 x Threaded Nuts for U-Bolts Set (M5 size)
- 1 x Metal Mounting Plate Set to Be Used with U-Bolt
- 1 x Stainless Steel Filter (for Rain Collector)

- 2 x Stainless Steel Round Head Cross Screw(for Mounting on the Surface)
- 2 x Tube Sleeve of Screws for Round Head Cross Screw
- 15 x Stainless Steel Bird Spike

Note： The Pole is not included in the package.

Note： Check the list when you receive the package. If any accessories are missing, please get in touch with us for replacement.

2.2 Pre-Setup Before Mounting

2.2.1 Install rain gauge filter

A stainless steel filter is included in the package. It's aimed to stop leaves or birds from dropping to avoid obstructing the cone hole. The installation is as simple as the figure 1 shows.

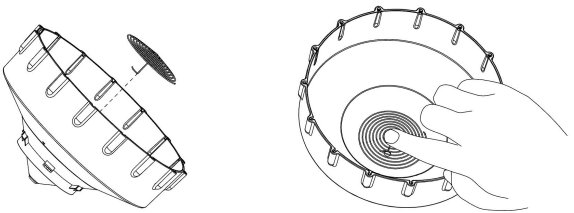


Figure 1

Install the filter by hooking the filter hook on the edge of the rain collector (as Figure 2 shows on the left).

To uninstall the filter, remove the filter hook from the edge (as Figure 2 shows on the right).

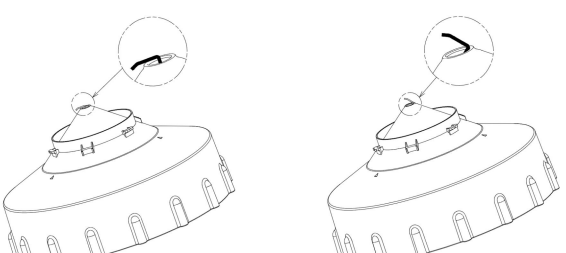


Figure 2

2.2.2 Install Rain Collector Top

Align the rain collector top with the rain bucket, paying 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 cannot be removed from the bucket. Failure to do this may cause the collector top to blow away in strong winds!

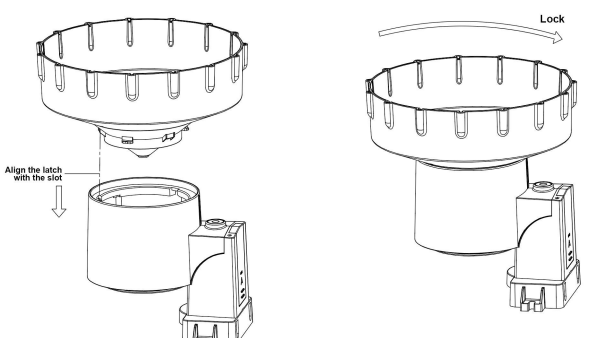


Figure 3

2.2.3 Install Batteries in Rain Gauge Sensor

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

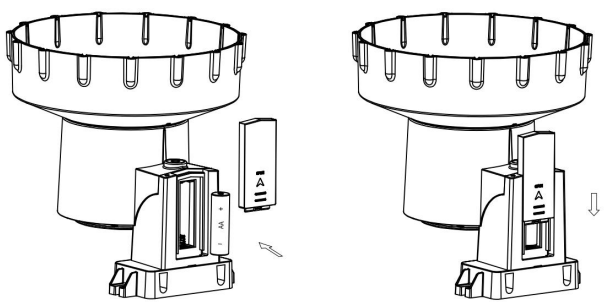


Figure 4

Note： 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. You can remove the batteries and start over until you see the flash once in every 49 seconds.

Note： If the LED does not light up or is permanently lit, please ensure the battery is inserted correctly, or a proper reset has been done. Please don't install the batteries backward. You can permanently damage the outdoor sensor.

Note： 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.

2.3 Multiple views and size

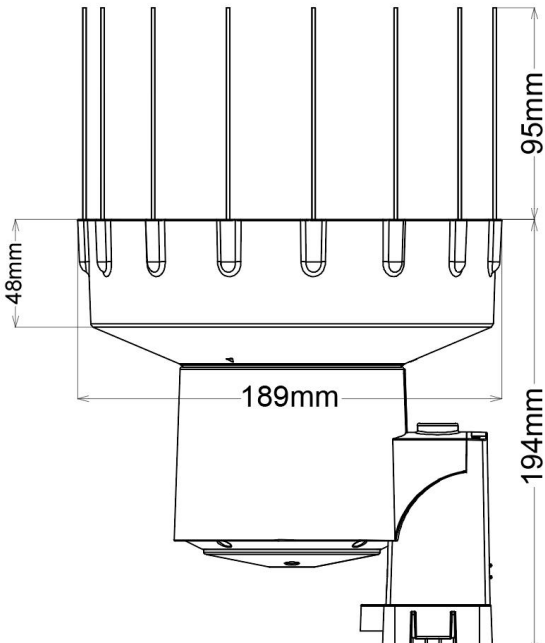


Figure 5 Size of the WH40H

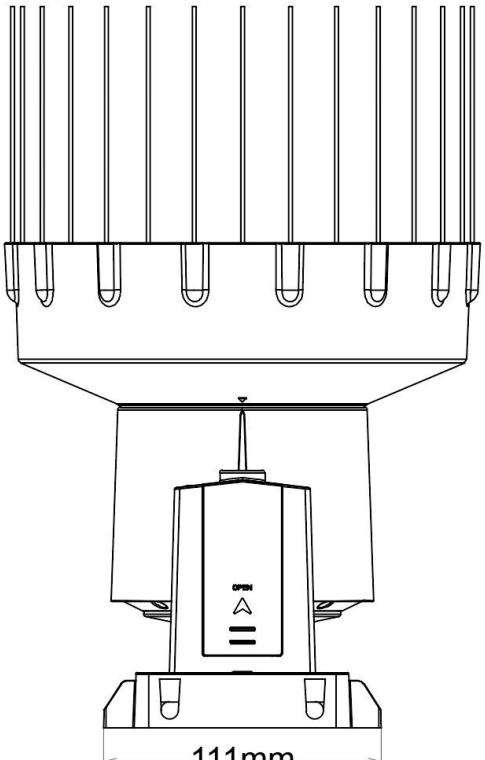


Figure 6 The back of the WH40H

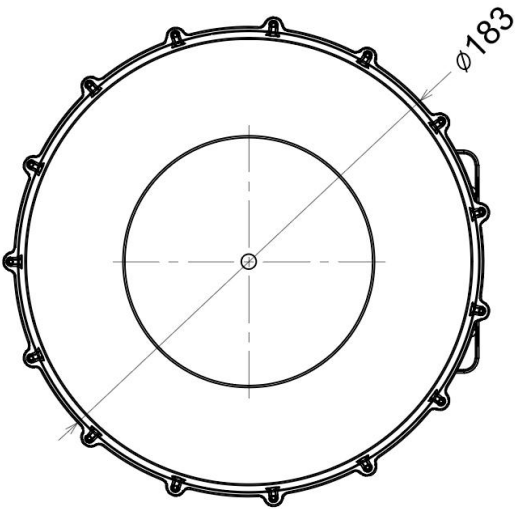


Figure 7 Vertical View of the WH40H

2.4 Sensor Assembly Components

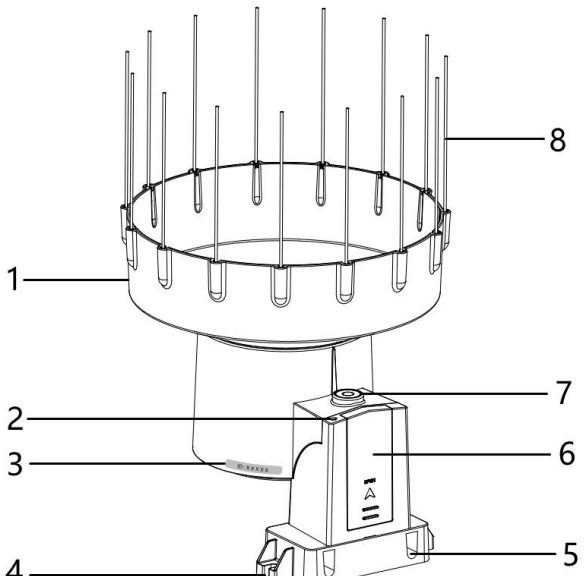


Figure 8 Sensor Assembly Components

NO.	Description
1	Rain Collector Funnel
2	LED Indicator
3	Sensor ID
4	Surface Installation Screw Hole
5	U-bolt Installation Hole
6	Battery Compartment Door
7	Bubble Level
8	Bird Spike

Table 1

3. Pairing with Gateway/Console

Before mounting, you must test whether the device can successfully connect with the gateway/console and send the data to the ecowitt server.

Note： The WH40H is only a rain gauge sensor that must pair with ECOWITT gateways or consoles (Sold separately). Before testing, please ensure you own an ecowitt gateway or console.

3.1 Consoles Can Display the WH40H Rainfall Data

After being powered on, the WH40H can directly pair with these display consoles via RF within the wireless transmission range.

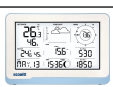
WH5360	HP2550	HP2560	WN1920	WN1980
				
HP3500	WS3800	WS3820	WS3900 /WS3910	
				

Table 2

Note： The WH5360 can connect with the WH40H and display its rain data but cannot send it to the Internet.

3.2 Gateways Can Send the WH40H Rainfall Data to the Server

The WH40H can pair with the ecowitt gateways/consoles, and they can send the WH40H rainfall data to the ecowitt server, as figure 9 shows.

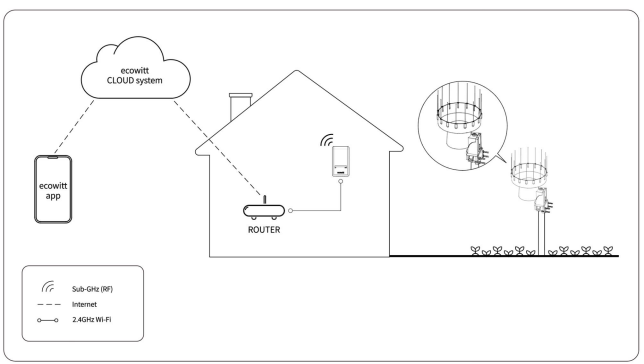


Figure 9 The Ecosystem of the Ecowitt

3.2.1 Option Gateways/Consoles That can pair with the WH40H

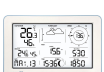
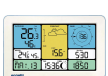
GW1100	GW1200	GW2000	GW3000	WS6210
				
HP2550	HP2560	HP3500	WN1920	WN1980
				
WN1820 /WN1821	WS3800	WS3820	WS3900 /WS3910	
				

Table 3

Note： The WN1820/WN1821 can pair with the WH40H and send its rainfall data to the server, but they cannot display the WH40H data.

3.3 Check the Sensor ID

The WH40H rain gauge sensor is a single-channel sensor. If you have multi-rain gauge sensors or your neighborhood owns an ecowitt rain gauge sensor, it does not ensure your gateway/console pairs with your desired WH40H. Thus, you need to check the sensor ID.

(1) How to check the sensor ID when you use the TFT display console

You can check the sensor ID on the console's sensor ID page. If the sensor ID displayed on the console differs from the WH40H's, please disable this sensor on the console and re-register the WH40H.

Note： The TFT Display Consoles： HP2550, HP2560, HP3500.

(2) How to check the sensor ID when you use the gateway or LCD console

The gateways and the LCD display consoles cannot display the sensor ID, so you need to go to the Ecowitt app or its embedded website (192.168.4.1) to check the sensor ID of the rain gauge sensor. If the sensor ID shown on the

app/website differs from the WH40H's, please disable this sensor on the app or website and re-register the WH40H.

Note：

The Gateways： GW1100, GW1200, GW2000, GW3000, WS6210

The LCD Display Consoles：WN1920, WN1980, WN1820, WN1821, WS3800, WS3820, WS3900, WS3910.

(3) When you use the WH5360

The WH5360 cannot send the rain data to the Internet nor display the sensor ID. So, you can manually trigger the WH40H rain gauge sensor to observe whether the reading on the WH5360 display console has changed. If yes, the WH5360 successfully pairs with the desired WH40H. Otherwise, you need to re-register the rain gauge sensor.

4. Mounting

Before proceeding with the outdoor mounting detailed in this section, you should keep the assembled outdoor sensor package nearby (preferably not closer to 5 ft. from the gateway). This will make troubleshooting and adjustments easier and avoid any distance or interference-related issues from the setup.

After the console/gateway configuration is completed and everything works, return here for outdoor mounting. If issues show up after outdoor mounting, they are almost certainly related to distance, obstacles, etc.

4.1 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 four U-bolt nuts.

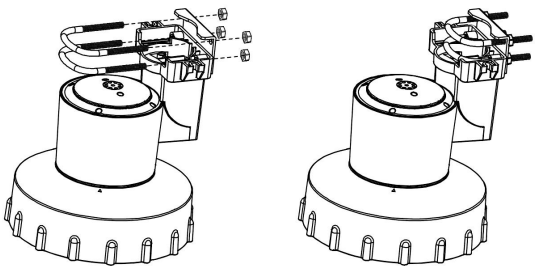


Figure 10

Insert the 15 bird spikes into the hole of the WH40H's rain bucket funnel toward the knurling end downward.
You should wear gloves when inserting the bird spikes to avoid the hurt to your fingers.

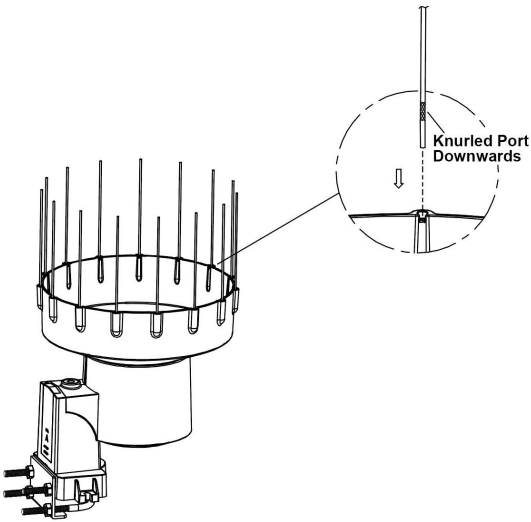


Figure 11

Note: The bird spikes are designed to drive the birds away. You can decide to install them as needed.

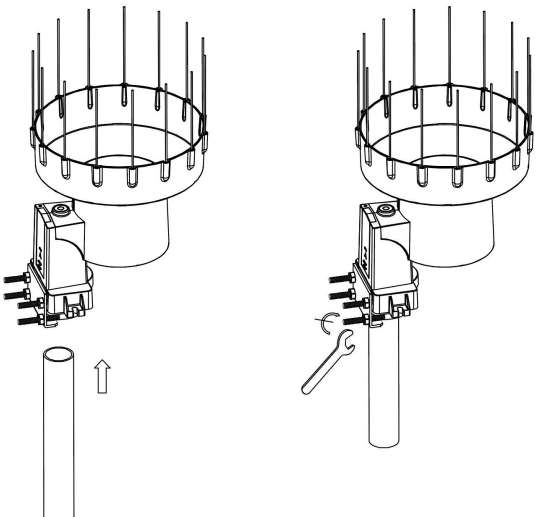


Figure 12

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

4.2 Mount with screws

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

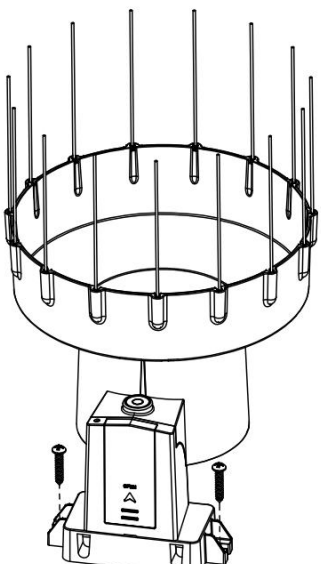


Figure 13

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

5. Best Practices for Wireless Communication

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

Electro-Magnetic Interference (EMI).

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

Radio Frequency Interference (RFI).

If you have other 920/915/433/868MHz devices (on the same frequency as 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.

Line of Sight Rating.

This device is rated at a 328-foot (100-meter) line of sight (no interference, barriers, or walls), but in most real-world installations, which include passing through barriers or walls, you will typically get a maximum of 100 feet (30 meters).

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. Feature

- Measures rainfall amount every 49 seconds.
- Long wireless range, up to 328 feet (100 meters) in open areas.
- 3.5cm extension height rain bucket funnel
- Coming with 15 bird spikes prevents birds from nesting in the rain collector.

7. Specification

Model	WH40H
Name	Wireless Self-emptying Rain Gauge Sensor
Dimensions	189*189*194mm
Weight	583.3g
Material of Plastic Casing	ASA+PC
Rainfall Metering Range	0mm to 9999mm
Rainfall Metering Accuracy	± 5%
Rainfall Metering Resolution	0.1 mm
Data reporting Interval	About 49 seconds
RF Connection Frequency	920/915/868/433MHz (depending on local regulations)
RF Wireless Range (in open areas)	Over 100 meters (328 ft.)
Operating Temperature Range	-40°C to 60°C(-40°F to 140°F)
Protection Rating	IPX4
Power Supply	1*AA battery (not included)
Battery Life	1 year

Table 4

8. Trouble Shooting

8.1 How to Test the WH40H Rain Gauge Sensor

It is recommended that you prepare a bottle of water and slowly pour the water into the rain funnel bucket of WH40H. Please observe whether the rain data changes in the Ecowitt app or ecowitt.net.

8.2 How to Replace the Faulty Sensor

If the WH40H is faulty and you get a replacement, remember these two sensors' IDs. Remove the batteries from the defective sensor and disable its ID on the Ecowitt app. Power up the replacement sensor and then re-register it on the Ecowitt app.

8.3 Rainfall Data Priority

Ecowitt has developed two kinds of rain gauge sensors：
the traditional one and the piezoelectric one.
The traditional rain gauge sensor： WH40,WH40H, WH65, WN67, WS69
The piezoelectric rain gauge sensor： WS85, WS90

Suppose you own ecowitt rain gauge sensors, including traditional and piezoelectric sensors. The Ecowitt and WSView Plus apps can display the conventional and piezoelectric rain gauge sensor data. However, the console can only display one kind of rain gauge sensor data. Therefore, if you use the console to pair with the rain gauge sensors, you need to set up the rainfall data priority.

Note： The TFT display consoles, such as HP2550 / HP2560/HP3500, support setting the rainfall data priority, while the LCD display consoles, such as WN1920 / WN1980 / WS3800 / WS3820 / WS3900/WS3910, do not. If you use the LCD console to pair with the rain gauge sensors, please set the rainfall data priority on the Rain Total page of the Ecowitt app.

8.4 WS69/WH40H Rain Gauge Accuracy Issue Check Listing

Tipping bucket rainfall sensor working principle： Rain falls into the receiving funnel and flows through it into the tipping bucket. When the rain reaches a certain level

(0.254mm for WS69, 0.1mm for WH40H), the tipping bucket loses balance and tips over. Each time it tips, it triggers a switch, activating the circuit to send a pulse signal to the recorder, which records the rainfall amount. This process repeats, allowing for accurate rainfall measurement.

If you find that the rain gauge data is inaccurate, please follow these steps to troubleshoot：

1. Check for debris in the rainfall funnel, such as leaves or bird droppings. Clean any debris found, as it can affect rainfall measurements. If the data returns to normal after cleaning, the issue is resolved.

2. If there is no debris, cross-check your rainfall data with weather maps on the ecowitt website or other weather websites. Compare data from multiple points in your area to confirm accuracy. Due to uneven rainfall distribution, single-point rainfall data may not be sufficient to verify sensor accuracy.

3. Test the counting function by dripping a small amount of water onto the tipping bucket using a syringe or measuring cup. Listen for a slight ringing sound and observe if the rainfall measurement in the app increases by 0.1mm (WS69 for 0.2mm, WH40H for 0.1mm). Proper operation indicates normal functioning. Avoid pouring water quickly to prevent the tipping bucket from malfunctioning.

4. Alternatively, manually simulate rainfall by dripping water slowly into the tipping bucket. For heavy rain (100mm/24h), drip 100mm of water over 3 minutes at an even rate; for medium rain (10mm/24h), drip 10mm of water over 1 minute at an even rate. Check the app to confirm whether the corresponding rainfall amount has been recorded.

5. If the rain data remains inaccurate after troubleshooting, internal parts may be damaged. Please contact customer service to arrange for the rain gauge body to be replaced.

Notes：

Light rain： precipitation intensity less than 2.5mm/24h.

Moderate rain： precipitation intensity between 2.5-10mm/24h.
Heavy rain： precipitation intensity between 10-50mm/24h.
Torrential rain： precipitation intensity between 50-100mm/24h.

9. Warranty & Caution

9.1 Warranty

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.

9.2 FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions： (1) this device should 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 to 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 a minimum distance between 20cm of the radiator and your body. Use only the supplied antenna.

IC Caution：

English：

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada’s license-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.

French：

L’émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d’Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L’exploitation est autorisée aux deux conditions suivantes：

1. L’appareil ne doit pas produire de brouillage;

2. L’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

Manufacturer： Shenzhen Fine Offset Electronics Co., Ltd.

Address：4/F, Block C, JiuJiu Industrial City, Shajing Town, Baoan District, Shenzhen City, China

10. Contact Us

10.1 After-sales Service

Order Issues：

If you encounter missing or incorrect shipments of Ecowitt products purchased, please contact 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 helping and resolving any concerns you may have.

10.2 Stay in Touch

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