

4. Pair with sensors

4.1 Connect with the rain gauge(does not require Wi-Fi)

(Will illustrated with a WN20 rain gauge and WH40H rain gauge)

Note:

- This connection does not require Wi-Fi. You can view rain data without being connected to a local network.
- Make sure that the RF frequency of sensor and console matches (the frequency is different for various countries because of regulations).
- Place the WN20 and the WN1700 console closely together in one location (about 1 m/3 ft distance) to easily test functionality. After testing, install the rain sensor in its desired location.
- However, that movement during and after assembly can cause the rain sensor (tipping bucket/spoon) to tilt and falsely detect rain. The rain total can be reset to 0 via the console or you can remove the batteries from the WN20 while moving it.

1. Power up rain gauge

- **Power up the WN20 rain gauge.**
Insert **2 AAA batteries** (not included).
 - **Power up the WH40H rain gauge.**
Install the filter and rain collector top. Remove the battery door on the back of the sensor by sliding it toward the arrow. Insert **1 AA battery** (not included).
2. When in learning mode (default), the WN1700 console will begin searching for the rain gauge sensor data automatically. This may take up to 3 minutes, after which the data will be displayed on the console.

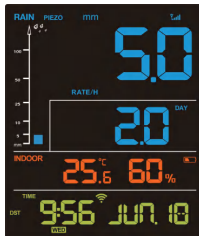


Figure 15 Normal Display Display Layout

3. If the rainfall data does not appear, hold the **RAIN1 / +** and **RAIN2 / -** buttons for 5 seconds. The device will register the transmitter signal for 3 minutes.

4.2 Download the Ecowitt App

Visit the App Store or Google Play Store or scan the QR code below to download the free Ecowitt App onto your mobile device.

Open the Ecowitt App, follow the on-screen setup instructions to create an account, add a new device, and follow **Section 4.3 or 4.4** below to connect your station to your Wi-Fi network.



Download on the
App Store

GET IT ON
Google Play



Figure 16 Download Ecowitt App

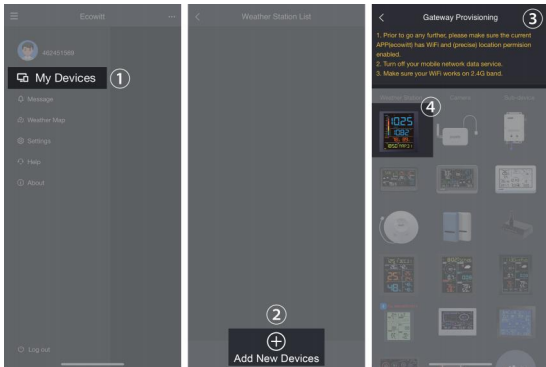


Note:

For **Section 4.3** and **4.4** below (2 ways to complete Wi-Fi configuration), you'll need your Wi-Fi network name (SSID) and password.

4.3 Connect the Station to Wi-Fi via Ecowitt App

(1) Open Ecowitt App → "My Devices" → "Add New Devices" → click WN1700 icon → choose WiFi Provisioning



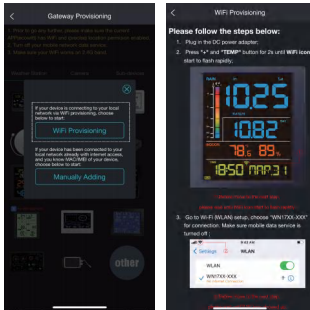


Figure 17

(2) Hold WN1700's **TEMP** & **+ / RAIN 1** buttons for more than 2s in normal mode will turn on its hotspot, Wi-Fi icon will flash fast on the screen. Use mobile phone to connect to the hotspot "WN1700x-WIFIxxxx" emitted by the receiver. Then tick "Operation Completed" → "Next".



Note:

1. The Wi-Fi function does not turn on when the device is running solely on battery power.
2. WN1700x-WIFIxxxx, the first x represents the frequency, A=868MHz, B=915MHz, C=433MHz, xxxx represents the last 4 digits of the product MAC address.

3. Allow location access, recommend selecting "While Using the App". Then return to the Ecowitt App.
4. Fill in the Wi-Fi SSID and password, then click "Submit".
5. Now the gateway setup is successful. Switch the network of phone to the same Wi-Fi WN1700 is connected to. The receiver has been successfully added to the App, then the data can be viewed online.



Note:

If you are unable to connect the WN1700 to Wi-Fi using the Ecowitt App, we recommend using the setup via Embedded Web Page 192.168.4.1 on the next page.

4.4 Web Page 192.168.4.1

- ① Hold WN1700's TEMP & + / RAIN 1 buttons for more than 2s in normal mode will turn on its hotspot, Wi-Fi icon will flash fast on the screen. Use a mobile phone to connect to the hotspot "WN1700x-WIFIxxxx" emitted by the receiver. Ignore a message from your phone that the network has no internet connection. It's true but not needed here.
- ② Use a mobile browser to search the URL 192.168.4.1. No password is set by default. Click login.
- ③ Click Local Network. Input your router credentials and tap on the "apply" button to make the setting effective.

④ Record the MAC address.

⑤ Switch the phone's WLAN network to the same Wi-Fi the WN1700 is connected to (usually your local network).

Open Ecowitt App → "My Devices" → "Add New Devices" → click WN1700 icon → choose Manually Adding.

⑥ Edit the Device Name and paste the MAC address copied in step (4) into the box. Then click "Save," and the device will be bound to (=registered on) your account.

4.5 Device Location, Time Zone, DST, and Data Public

After completing the Wi-Fi configuration, follow these steps for Device location, Time zone, DST (Daylight Saving Time), and Data public settings.

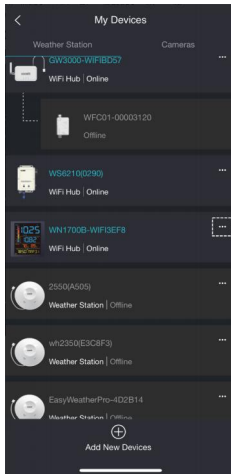
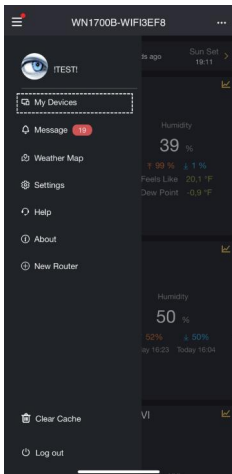
1. Click on "My Devices".

2. Click on the "... " icon.

3. Set the Device's location and Time zone on this interface.

Tick "Auto DST" and "Is Public" when necessary.

4. Click "Save," then reboot (power-cycle) the WN1700 device; the WN1700 will automatically synchronize time and DST.



Edit Gateway

WN1700B-WIFI3EF8
internet: Online

Device Name : WN1700B-WIFI3EF8

Device Type : Weather Station

MAC : 58:CF:79:DC:3E:F8

Version : V1.0.0

Device Location : 22.5455000° N, 114.0663000° E

Timezone : Asia Shanghai

Is Public: ☒

☐ Select All

☒ Outdoor	☐ Indoor	☐ Solar and UV
☒ Rainfall	☒ Rainfall Pico	☒ Wind
☒ Pressure	☒ Lightning	☒ CO2 AQI Combo
☒ PM2.5 AQI Combo	☒ PM10 AQI Combo	☒ PM1.0 AQI Combo
☒ PM1.0 AQI Combo	☒ TSP11 AQI Combo	☒ Leaking
☒ PM2.5 CH1	☒ PM2.5 CH2	☒ PM2.5 CH3

Save

Figure 18 Related settings via Ecovitt App



Note: After completing the above Wi-Fi configuration and related settings, the WN1700 screen will display a stable Wi-Fi signal, auto time zone, and DST (when in effect).

4.6 Adding Sensors

To pair the optional sensors (refer to **Section 7** for more optional sensors) with the WN1700, please do as follows:

1. Power the sensor on and place it next to the console.
2. Wait 1~2 minutes, check whether the console will automatically pick up the sensor data and display it on the screen or App.
3. If data is not received from a registered sensor, the number of bars behind the RF icon will decrease the by one; if data is received, the number of bars behind the RF icon will increase by one.
4. If data is not received, try the following: after **ensuring the phone and WN1700 are connected to the same Wi-Fi network**, open the Ecowitt App→Sensor ID→enter the Sensor Management page.
5. On the Sensor Management page, find the sensor you want to pair, select the ID number box, and register it with its SensorID. The SensorID is usually printed on a sticker on the sensor.
6. Once successful, you may return to the main interface to check the data.

If you know precisely the sensor ID and want the WN1700 to pair that sensor only, you may enter the sensor ID and save the change to make it effective.

If you have more than one sensor of the same type (e.g. a WN20, a WH40 and a WS69, the console will

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If you know precisely the sensor ID and want the WN1700 to pair that sensor only, you may enter the sensor ID and save the change to make it effective.

If you have more than one sensor of the same type (e.g. a WN20, a WH40 and a WS69, the console will automatically

register the sensor which is highest in the so-called sensor hierarchy (WS85 > WS90 > WH40 > WS69 > WN20). If you want a specific sensor to be connected, you have to actively enter its SensorID as described before. The sensor hierarchy applies to wind, rain, outdoor/indoor temperature and solar data.

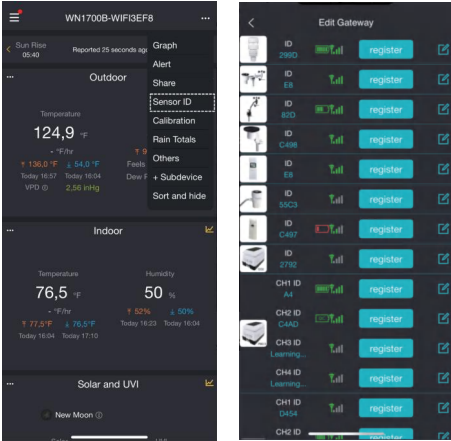


Figure 19 Sensor ID page

4.7 Historical Data Export and Clear

4.7.1 Export History Data

WN1700 doesn't support storing data on a memory card. When the Wi-Fi configuration is completed, you can log in to Ecowitt.net to export the data in CSV file format.



Note:

Data with a query period of days/24 hours is retained for three months (data resolution 5 minutes).

Data with a weekly query period is retained for one year (data resolution 30 minutes).

Data with a monthly query period is retained for two years (data resolution 3 hours).

Data with a yearly query period is retained for four years (data resolution 6 hours).

4.7.2 Clear History Data on ecowitt.net

Under "menu" → "devices" → "..." → "Sure"

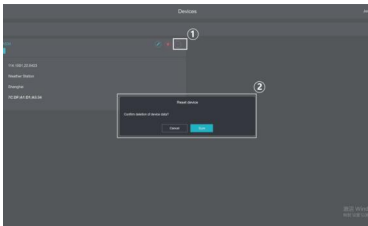


Figure 20 Clear History Data

4.8 Firmware Upgrade

Method 1: Via Ecovitt App

(the Ecovitt app must be connected to the same local network as the console)

Open Ecovitt App → My Devices → "..." (Open the Edit Gateway page) → tap the firmware version number to upgrade if a new version is available. When the upgrade is complete, the WN1700 will reboot into the latest version.

Method 2: Via web page 192.168.4.1

for this the internal hotspot WN1700x-WIFIxxxx must be activated

Method 3: via the inbuild webpage (WebUI):

(the computer must be connected to the same local network as the console)

http://IP-address-of -your console
→Device settings

Method 4: via the WS View Plus app in the same local network by choosing your console in the WS View Plus device list. When an upgrade is available, a pop-up window will appear.

4.9 Calibration

If you have data from a trusted near-by (!!) weather station, you can use its data as an indication. Be aware you're your microclimate data can differ from public weather station data without being wrong.

1. Make sure your mobile device is connected to the Wi-Fi network WN1700 is connected to.
2. Click "... " on the top right corner and choose "Calibration".
3. For a particular parameter (Take Outdoor temperature as an example in **Figure 21**). Calculate the offset of data from an accurate reference sensor.
4. Fill in the offset from step 3 , and click Save.

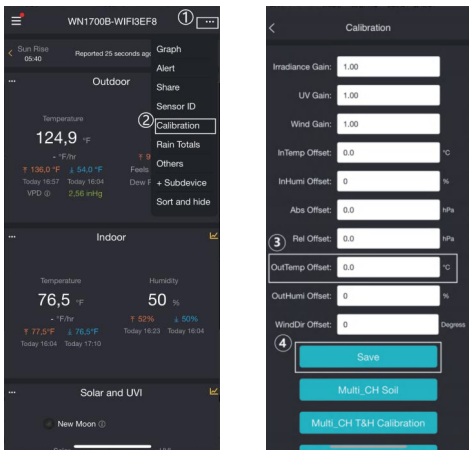
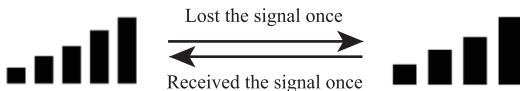


Figure 21 Calibration

4.10 Sensor Signal Quality Indicator

During the synchronization, it will reduce one signal segment (bar) if it has not received the signal once from the transmitter. It will increase it by one signal segment if it has received the signal once (the maximum number of bars is 5).



4.11 Upload Data to Server

After the Wi-Fi configuration is successful, data can be uploaded to the following weather station servers:

- A. ecowitt.net (Default upload to this server)
- B. wunderground.com
- C. weathercloud.net
- D. wow.metoffice.gov.uk
- E. A user-chosen (Customized or DIY) server

Upload servers' management:

- (1) Ensure the mobile phone and WN1700 receiver use the same Wi-Fi.
- (2) Ecowitt App → "... " at the top right corner → "Others" → "DIY Upload Servers"

4.12 Best Practice for Wireless (RF) 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 and the console:

Indoor/outdoor sensor placement: The sensor will have the longest reach for its signal when mounted or hung vertically. Avoid laying it down on a flat surface.

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 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 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.

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 7 RF Signal Strength reduction

5. Rainfall settings

5.1 Rain Sensor Priority

Ecowitt supports two types of rain gauge sensors: traditional tipping-bucket sensors (WH40, WH40H, WH65, WN67, WS69, WN20) and piezoelectric sensors (WS85, WS90).

When multiple sensors are connected, each type follows a specific display priority:

for traditional tipping-bucket sensors, the priority is WH40 = WH40H > WH65 = WN67 = WS69 > WN20; for piezoelectric sensors, the priority is WS85 > WS90.

5.1.1 How to set rain sensor priority

While in Normal Mode, hold the MODE button for 2 seconds. Press MODE Till Rain Sensor Priority Selection (Traditional / Piezoelectric) appears. Use the RAIN 1/+ or RAIN 2/- buttons to change the value.

5.2 Clear the rainfall value

In Normal Mode

- Hold the **RAIN1/+** button for more than 5 seconds to clear the current rainfall value displayed for RAIN1.
- Hold the **RAIN2 /-** button for more than 5 seconds to clear the current rainfall value displayed for RAIN2.

5.3 Rain Gauge Sensor Registration

Hold both RAIN1/+ and RAIN2/- buttons simultaneously for more than 5 seconds to re-register all connected rain gauge sensors.

6. Optional Sensors

6.1 Sensors

When powered by DC or battery, the device supports these sensors as below.

The following sensors can be purchased separately. For more information, please visit our website: <http://www.ecowitt.com>. Select the model of the units with the same RF frequency as your gateway or display (the frequency is different for various countries because of regulations).



Note:Max QTY of the following table means the maximum number of sensors of each type which can be connected to the WN1700.

The WN1700 supports all existing Ecowitt sensors including the IoT (internet of things) devices. The data of all connected sensors can be viewed

- At the ecowitt.net dashboard in the Ecowitt Weather Cloud in a one-minute resolution
- In the Ecowitt app in a one-minute resolution
- In the inbuilt browser interface (WebUI) in real-time
- In the WS View Plus app in realtime

6.1.1 Sensor Data which can be displayed on the console screen

Sensor Model	Max QTY	Picture	Functions
WN20	1		Rainfall
WS85	1		Rainfall wind data upload only but no display
WS90	1		Outdoor temperature & humidity, rainfall wind, light, UV upload only but no display
WS80	1		Outdoor temperature & humidity, wind speed/ direction wind, light, UV upload only but not display

WS69	1		Outdoor temperature & humidity, rainfall wind, light, UV upload only but no display
WS68	1		wind speed / direction , light , UV upload only but no display
WH40/WH40H	1		Rainfall
WN32P	1		Indoor temperature, humidity and pressure
WN32	1		Outdoor temperature humidity
WN31	8		Temperature and humidity
WN30			Temperature

WN36			Pool temperature
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Table 8

6.1.2 Sensor Data which can only be uploaded to the Ecowitt Weather Cloud

Sensor Model	Max QTY	Picture	Functions
WH51L	16		Soil moisture
WH51L			Soil moisture
WN34L/S/D	8		Temperature
WN35	8		Leaf wetness

WH57	1		Lightning detection
WH41/WH43	4		PM2.5
WH45/WH46*	1		WH45: CO ₂ , PM2.5, PM10, temperature and humidity WH46: CO ₂ , PM1.0, PM2.5, PM4.0, PM10, temperature and humidity
WH55	4		Water leak detection
LDS01	4		Laser distance sensor

*) The WH45, WH46, WH46D data might be displayed on the console screen in the future via a firmware upgrade.

6.2 IoT Devices

The WN1700 console is a fully functional IoT hub.

Sensor Model	Max QTY	Picture	Functions
WFC01	16*		Smart water timer
AC1100			Smart plug
WFC02			Smart water timer

Table 9

*) any combination of IoT devices must not be more than 16 devices together.

7. Features

- **Built-in Sensors:**
Equipped with internal temperature & humidity sensor and barometric pressure sensor.
- **Multi-Data LCD Display:**
Supports display of traditional/piezoelectric rain gauge data, indoor/outdoor temperature & humidity, and up to 8 channels of outdoor temperature & humidity sensors.
- **Gateway and IoT Functionality:**
Can serve as a gateway to receive data from various sensors and as a hub for IoT devices. Sensor data can be viewed.
- **Web-Based Configuration:**
Supports Wi-Fi setup and advanced configuration via web interface, including server settings, sensor calibration, and Sensor ID management.
- **Wi-Fi Connectivity:**
Enables real-time data upload to weather platforms via Wi-Fi.
- **Auto Timezone & NTP Support:**
Automatically syncs timezone and network time via the internet.
- **Customizable Units:**
Supports unit conversion and display settings.

- **Backlight Control:**

When powered via DC input, LCD backlight brightness is adjustable.

8. Troubleshooting Guide

Problem	Solution
No rainfall data displayed	Check and remove any debris from the funnel inlet hole. Open the funnel and remove any insects or obstructions from the tipping mechanism.
Temperature reads too high in the day time.	<u>Indoor temperature:</u> make sure the console is placed in a shaded area. <u>outdoor temperature:</u> make sure the console is placed in a shaded area or on a north facing wall.
Display console contrast is weak	Replace console batteries with a fresh set of batteries.
How to perform a Rain Gauge Accuracy Cross Check Before Calibrating, (Use WH40/WH40H as illustration)	Collect Water: Use a narrow-neck bottle placed under the rain gauge's water outlet to collect water during a rain event. Measure the weight (e.g., 353 g). Calculate Rainfall Depth: Since $353\text{ g} \approx 353\text{ ml}$, divide by the rain collector area (250 cm^2):

Problem	Solution
	Calculation: $353 \text{ ml} / 250 \text{ cm}^2 = 1.412 \text{ cm}$, or approximately 14.1 mm. Compare Readings: Compare this calculated rainfall depth with the reading on your console or a calibrated manual gauge. Adjust for Discrepancies: Note that due to residual water in the tip bucket and on the collector, the measured rainfall is usually slightly less (within 5%) than the actual amount. If the deviation exceeds 5%, adjust the calibration settings accordingly or contact customer service for replacement.

9. Specifications

Model	WN1700
Name	High Precision WiFi Rain Gauge
Transmission distance in open field	100m(328 ft)
Frequency	915/868/433MHz depending on location(North American: 915MHz; Europe:868MHz; Other areas:433MHz)
Indoor temperature and humidity data measuring interval	60s
Indoor temperature measuring range	-9.9°C–60°C (14°F–140°F)
Outdoor temperature displaying range	-40°C–60°C (-40°F–140°F)
Indoor temperature accuracy	± 1°F / ±0.56°C
Indoor humidity measuring range	1%–99%
Indoor relative humidity	±6% for 30–80% RH
accuracy (at 25°C):	±5% for 1–29% & 80 – 99% RH
Power supply	2 AA batteries (not included) / 5V DC
Battery life	20 days

Table 10

10. Warranty Information

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

All trademarks and patents are recognized.

We provide a 2 years 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.

Manufacture: Shenzhen Fine Offset Electronics Co., Ltd.

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

11. 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.

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.

12. Contact Us

12.1 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.

12.2 Stay in Touch

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



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