ecowitt®

Wired and Wireless Wi-Fi Gateway

built-in Temperature, Humidity and Barometric Sensors



Model: GW2000

https://s.ecowitt.com/R7VWAP

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1 Getting Started

1.1 Package List

1 x Wired and Wireless Wi-Fi Gateway
1 x Mounting base
1 x USB cable
1 x User manual
1 x Quick start guide
3 x Screws

Note: The gateway is powered via a USB cable. Use the included USB cable and connect it to a power adapter (not included).

1.2 Multiple Views and Size (Unit:mm)

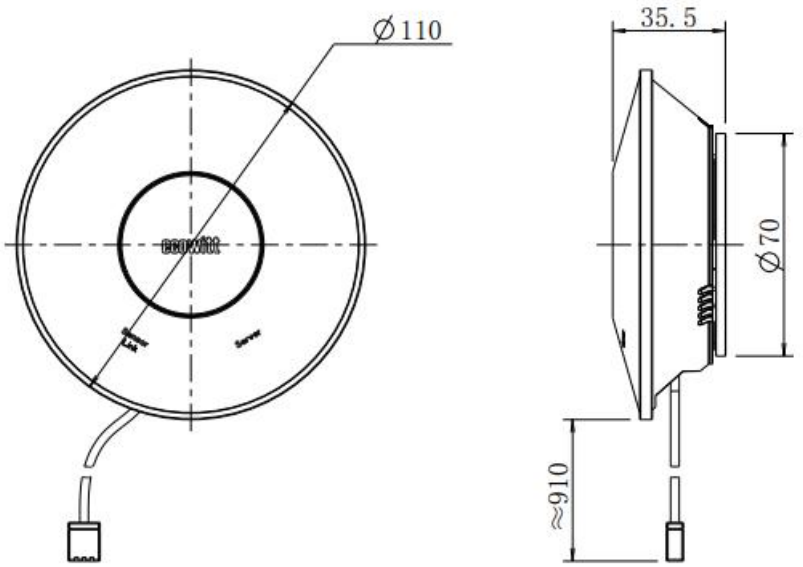


Figure 1 Gateway size



Figure 2 Mounting base size

1.3 Overview

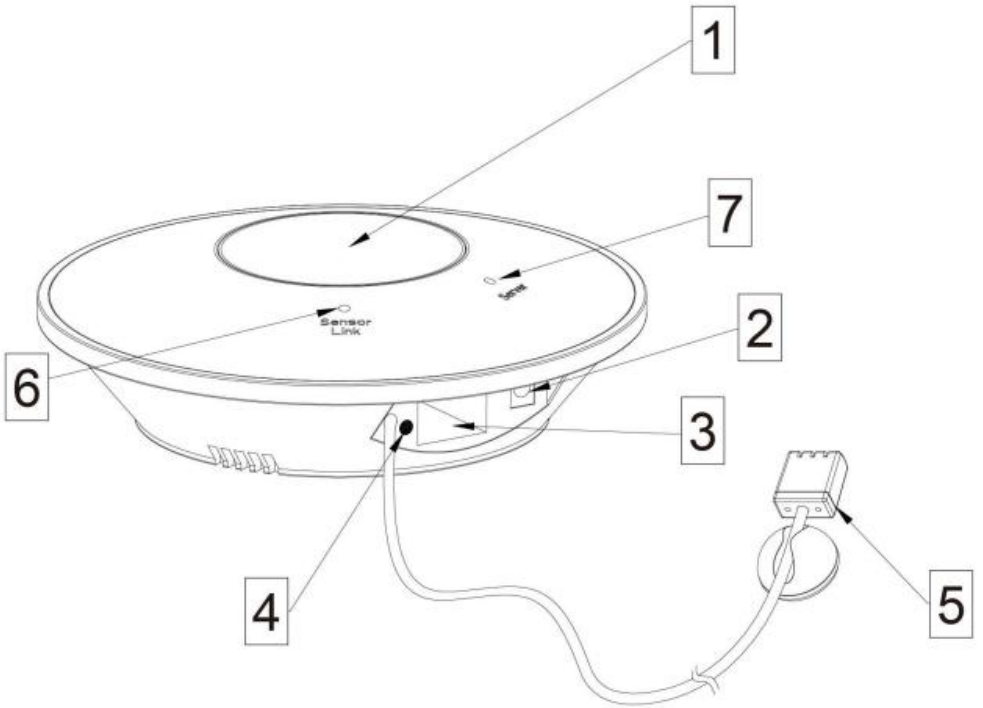


Figure 3 LED Indicators

No.	Description
1	Reset button
2	DC Power Socket
3	Ethernet Socket
4	Ethernet Indicator LED
5	Temperature & Humidity Sensor
6	Sensor Link LED
7	Server LED

Table 1 Overview

1.4 Reset Button & LED Indicators



Figure 4

Item	Function
Reset Button	Hold for 5 seconds to enter the Wi-Fi configuration mode Hold for 10 seconds to restore factory settings
Ethernet Indicator LED	**On:** Ethernet cable is connected **Blink:** Data received **Off:** Ethernet cable is not connected
Sensor Link LED (Blue)	**On:** Blinks when one packet of wireless sensor data was received **Off:** No wireless sensor data is received

	● **How to solve?** Please check whether the sensor is working normally, and make sure that the sensor can connect to the device hotspot "GW2000-WIFIXXXX" with a mobile phone/PC, open the browser, and log in to the webpage 192.168. 4.1 (the initial password is empty), enter the Sensors ID interface to re-register the corresponding wireless sensor
Server LED(Red)	**On (steady):** Network communication normal and data uploaded to configured weather service(s) successfully **Fast Blink:** Wi-Fi configuration mode is active **Slow Blink:** ● Network communication normal, but upload to one or more configured weather services failed ● **How to solve?** 1. First confirm Internet access through your router is functioning;

	2. Check whether the upload server account and password are correct **Off:** Wi-Fi connection failed

Table 2 Button Function and LED Indicators

2 Ecowitt System Introduction

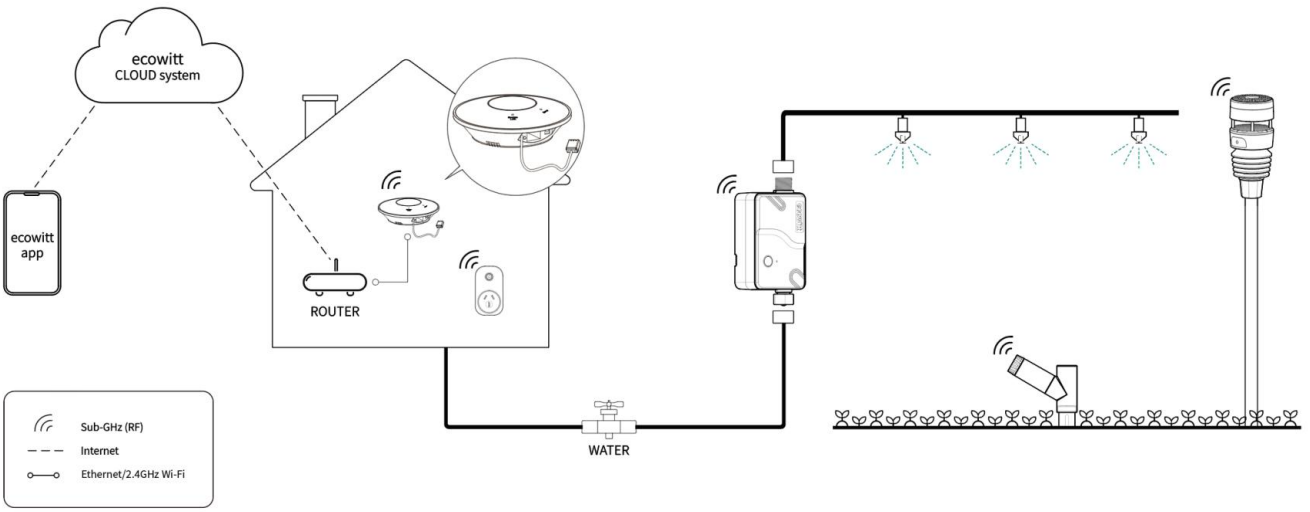


Figure 5 How Ecowitt System Works

Thank you for purchasing this GW2000 Wired and Wireless Wi-Fi Gateway, with built-in temperature, humidity, and barometric sensors. It can also handle all the Ecowitt sensors that have been developed. By upgrading firmware, future sensors developed can also be hosted, making the gateway an extremely flexible Ecowitt ecosystem possible.

We at Ecowitt are very conscientious about your possible concerns regarding sending your data into a cloud. Not only do we not share your data with any third party, we also offer you a possibility to manage your data locally by the help of a special tool-the Ecowitt app. You may refer to the Ecowitt APP instruction for more details.
To ensure the best product performance, I'd like you to please read this manual and keep it for future reference.

General Terms Used in the Manual:

Weather Station: Includes the console and sensors (or sensor array).
Gateway: Also known as a hub, it is a Display less console. Here, refer to the GW2000 device.
Transmitter: Refers to the sensor.
Receiver: Refers to the console.
RF: Radio frequency.

It refers to the ISM and SRD SUBG (Industrial, Scientific Medical, and Short Range Devices frequency bands below 1 GHz) for communicating between the gateway and its sensors. This frequency is different from the 4G modem or Wi-Fi working frequency. To avoid interferences, ISM/SRD bands are kept separate from 4G

frequencies by national regulations. Typical ISM/SRD frequencies are 915 (Americas), 868 (Europe), 433 (worldwide), and 920 (Japan, Korea).

3 Ecowitt Network Provisioning

3.1 Power Up

Preparing a power adapter with a USB port (not included) in advance. Power the GW2000 using a USB cable.

3.2 Install Ecowitt APP

1. Scan the QR code on the packaging box to down load the app.

2. Assure you have the location and Wi-Fi service enabled for this Ecowitt APP.

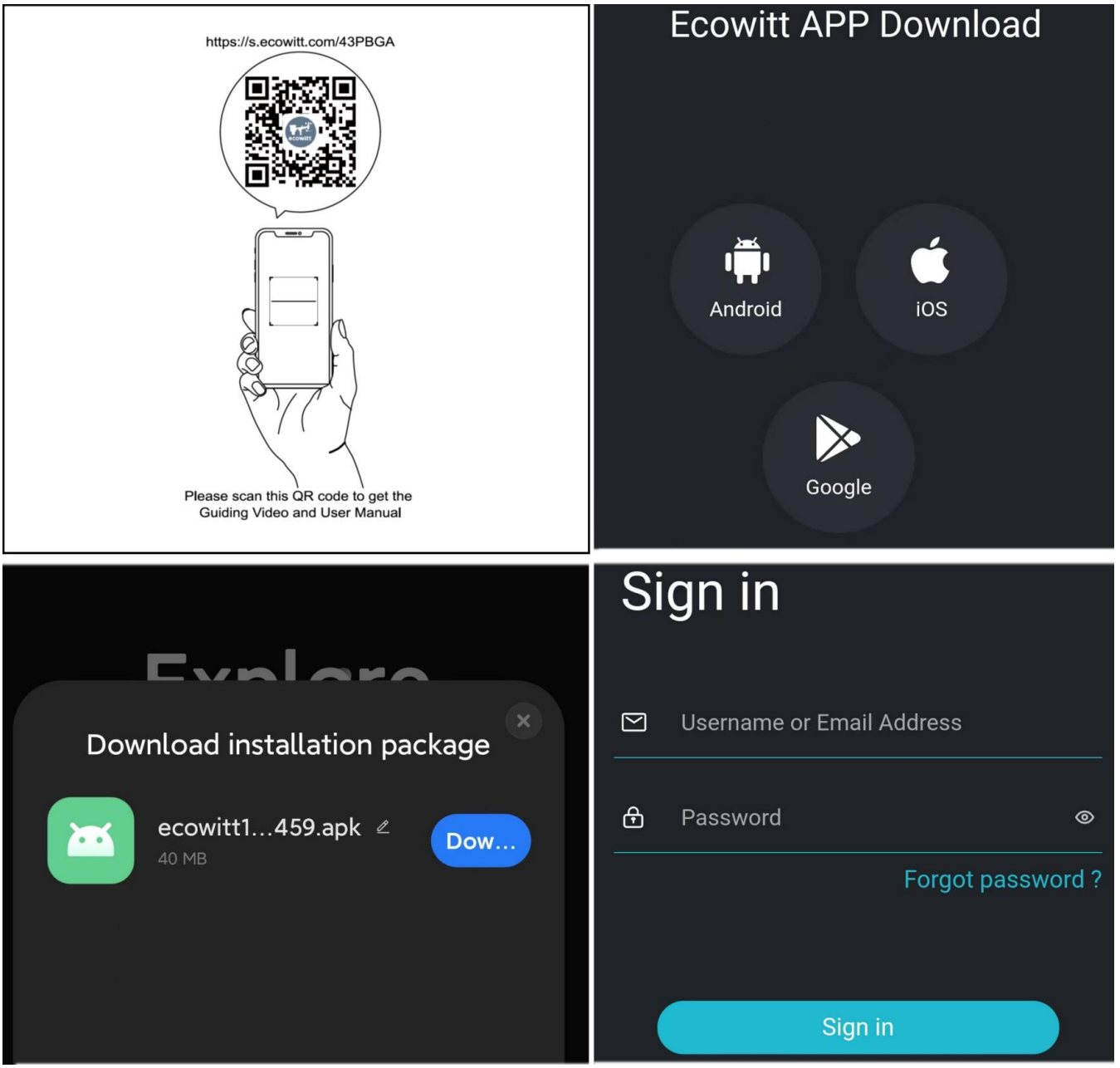


Figure 6 Download and Sign in Ecowitt App

3.3 Ecowitt APP Network Provisioning

There are three ways to configure the network：

1.Scan QR Code.
2.WIFI Provisioning.
3.Manually Adding.

Please select one of them to complete the network configuration. After you completed if you want to change your router, please follow this section again.

3.3.1 Scan QR Code

1. Connect the GW2000 to the Ethernet cable(not included).
2. Open Ecowitt App, click "My Devices", and click "Add New Devices", choose the model of GW2000 from the product listing. Click "Scan QR Code" .

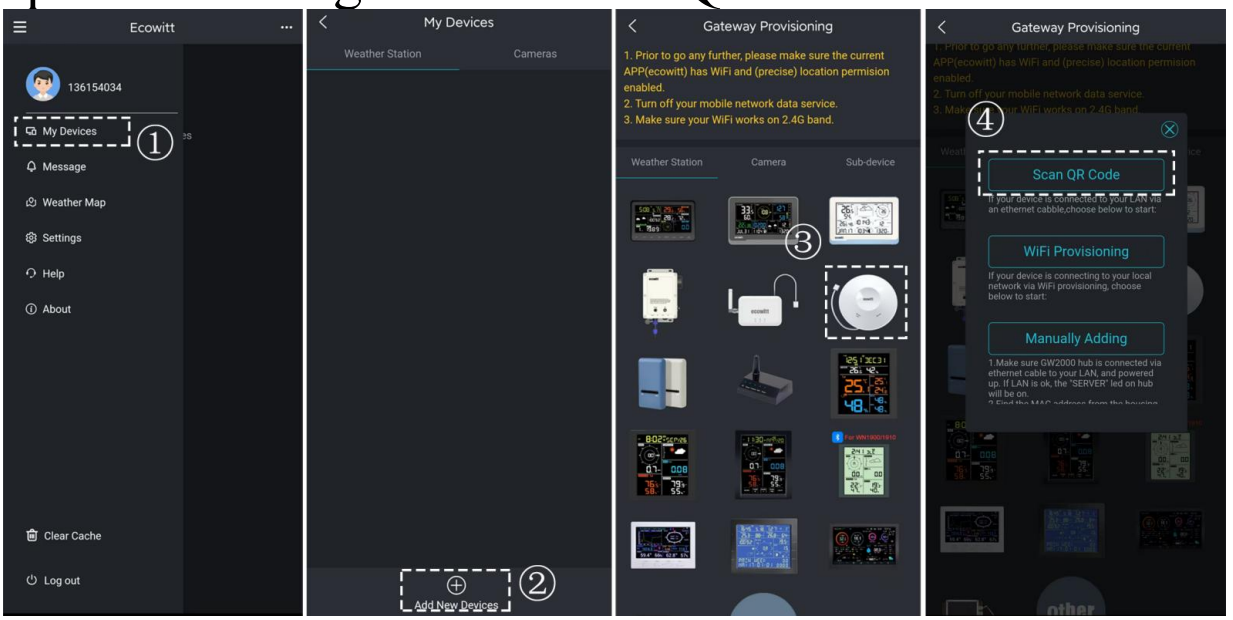


Figure 7

3. Scan the QR code on the device and click "Save" to bind it simultaneously.

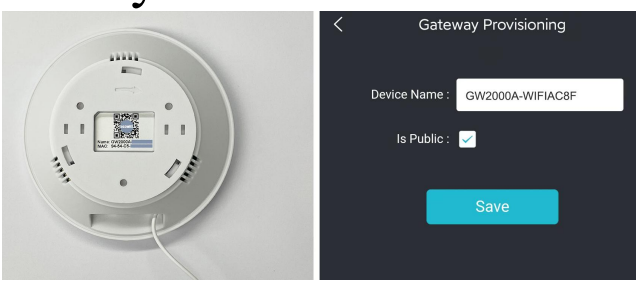


Figure 8

4. Wait approximately 1~2 minutes for the data to upload.

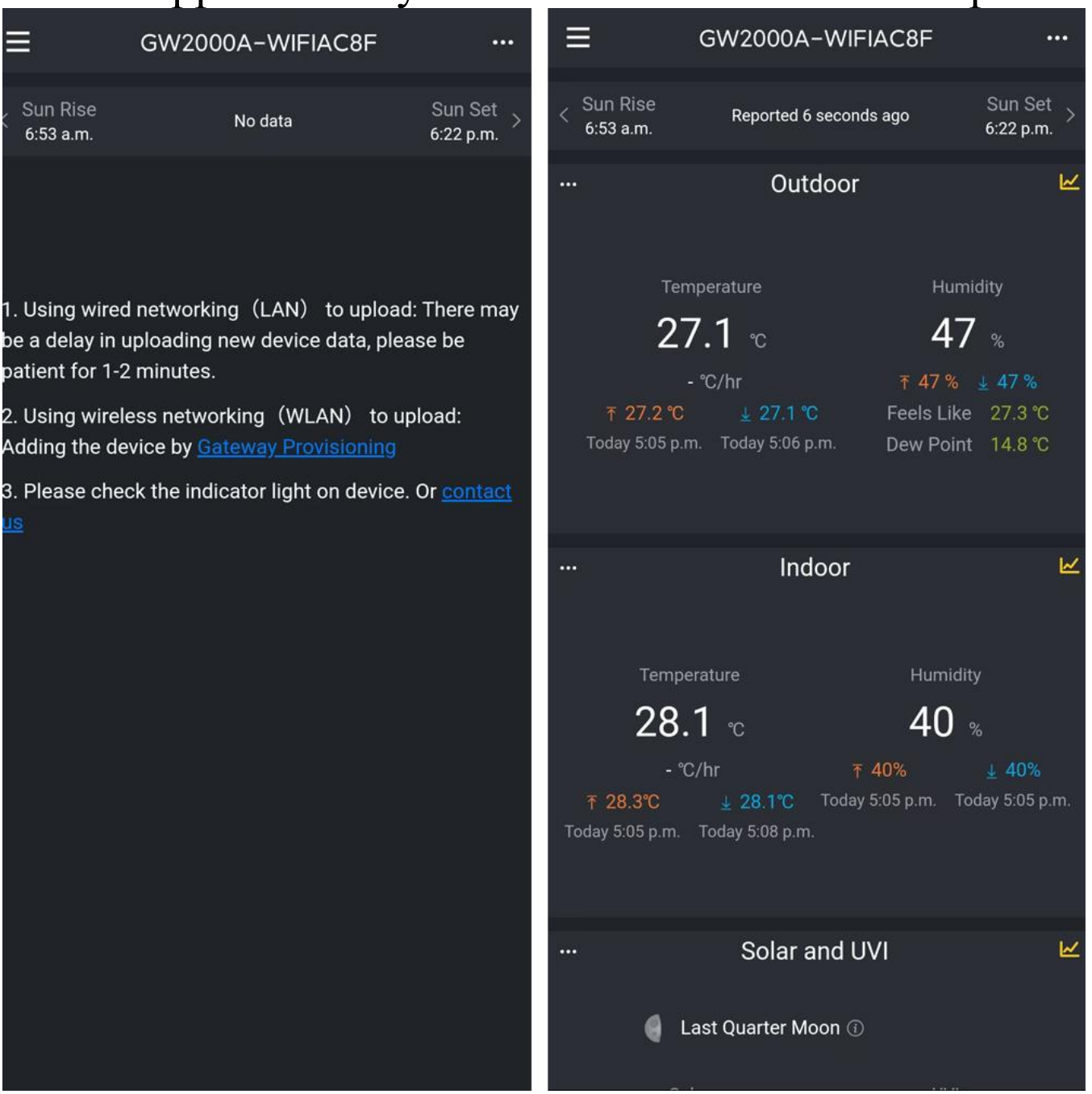


Figure 9

3.3.2 WIFI Provisioning

1. Ensure the GW2000 is in WiFi configuration mode, indicated by the red Sensor Link LED blinking quickly. If it's not blinking after powering on, press and hold the reset button for 5 seconds or reconnect the power.
2. Open Ecowitt App, click "My Devices", and click "Add New Devices", choose the GW2000's icon to configure the WiFi Provisioning.
3. Use your mobile phone to connect to the hotspot "GW2000x-WIFIxxxx".
4. Allow location access, recommend selecting "While Using the App". Fill in the Wi-Fi SSID and Password.

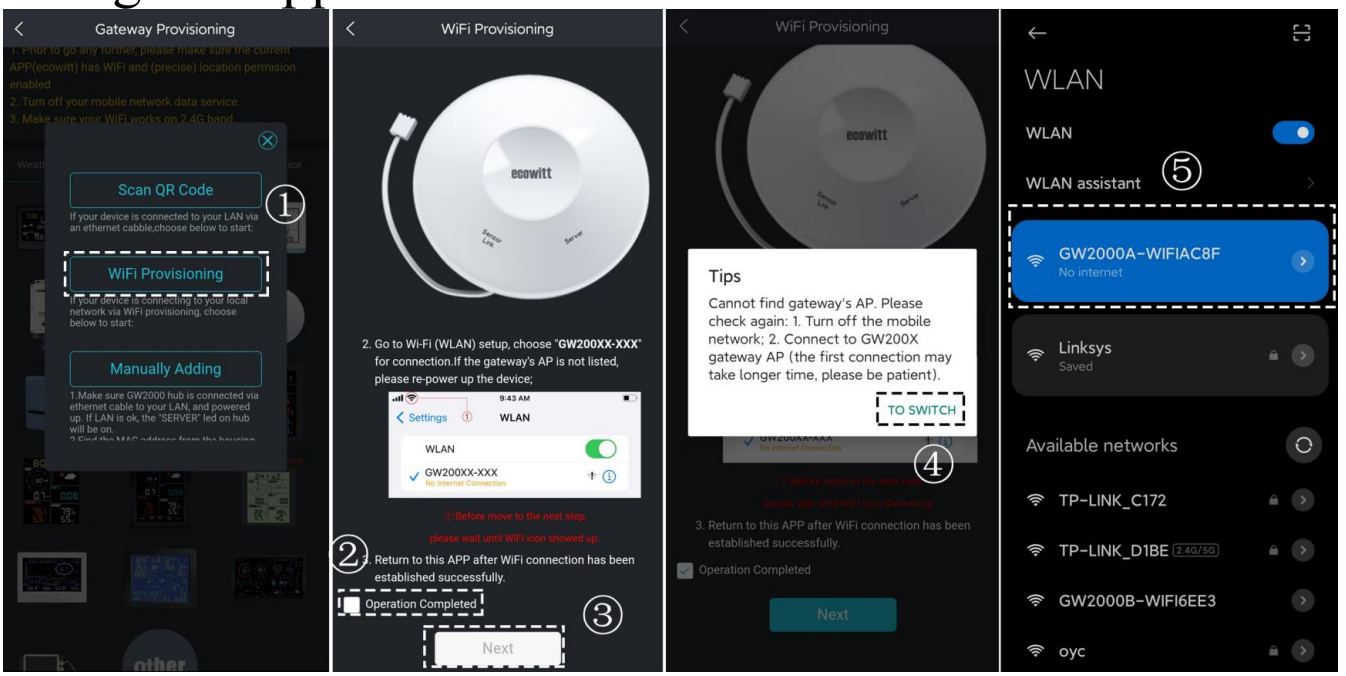


Figure 10 APP Wi-Fi Provisioning Operations

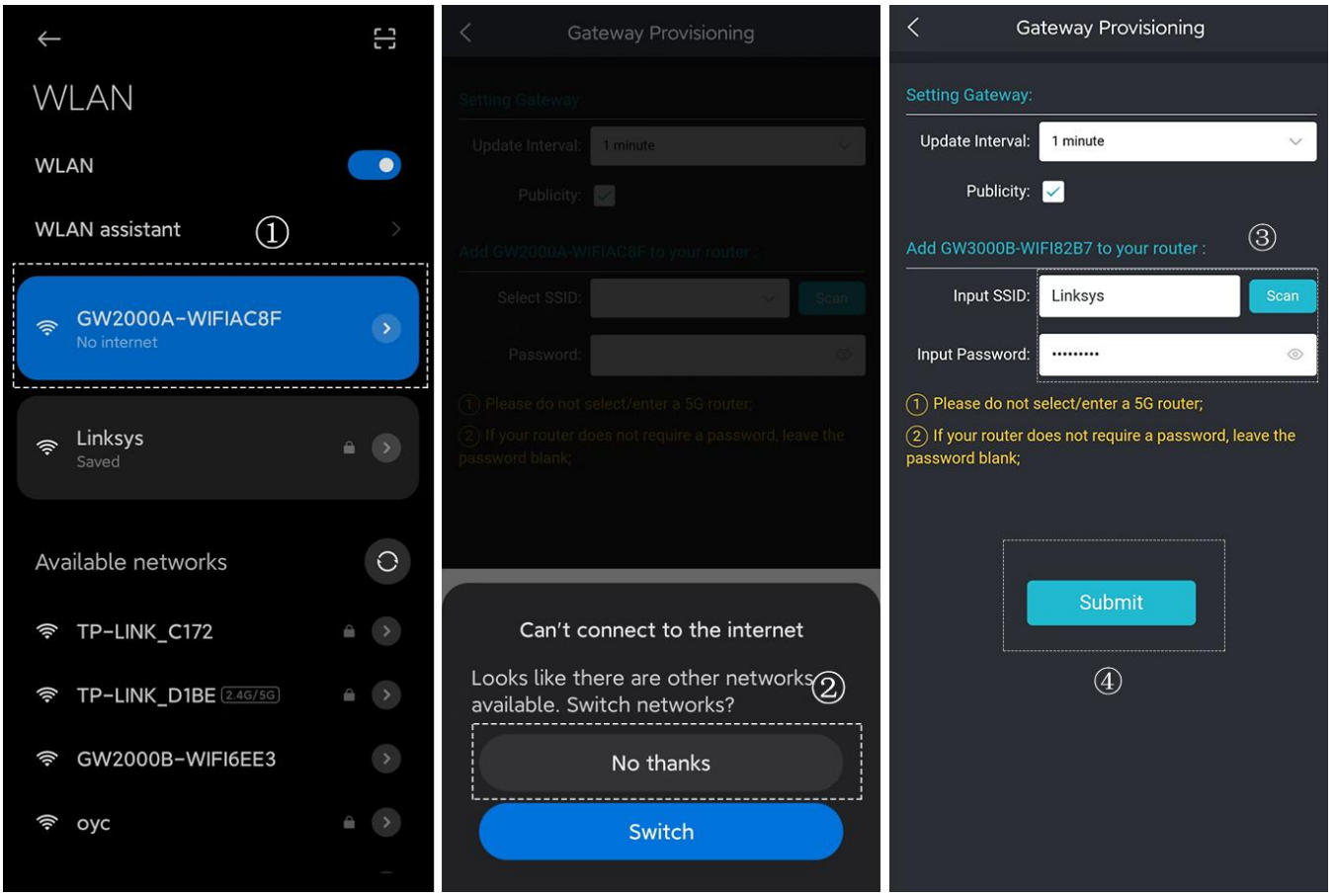


Figure 11

4. After the setup is successful. Switch to your usual Wi-Fi. GW2000 has been successfully added to the App, and you can view the weather data on the App.

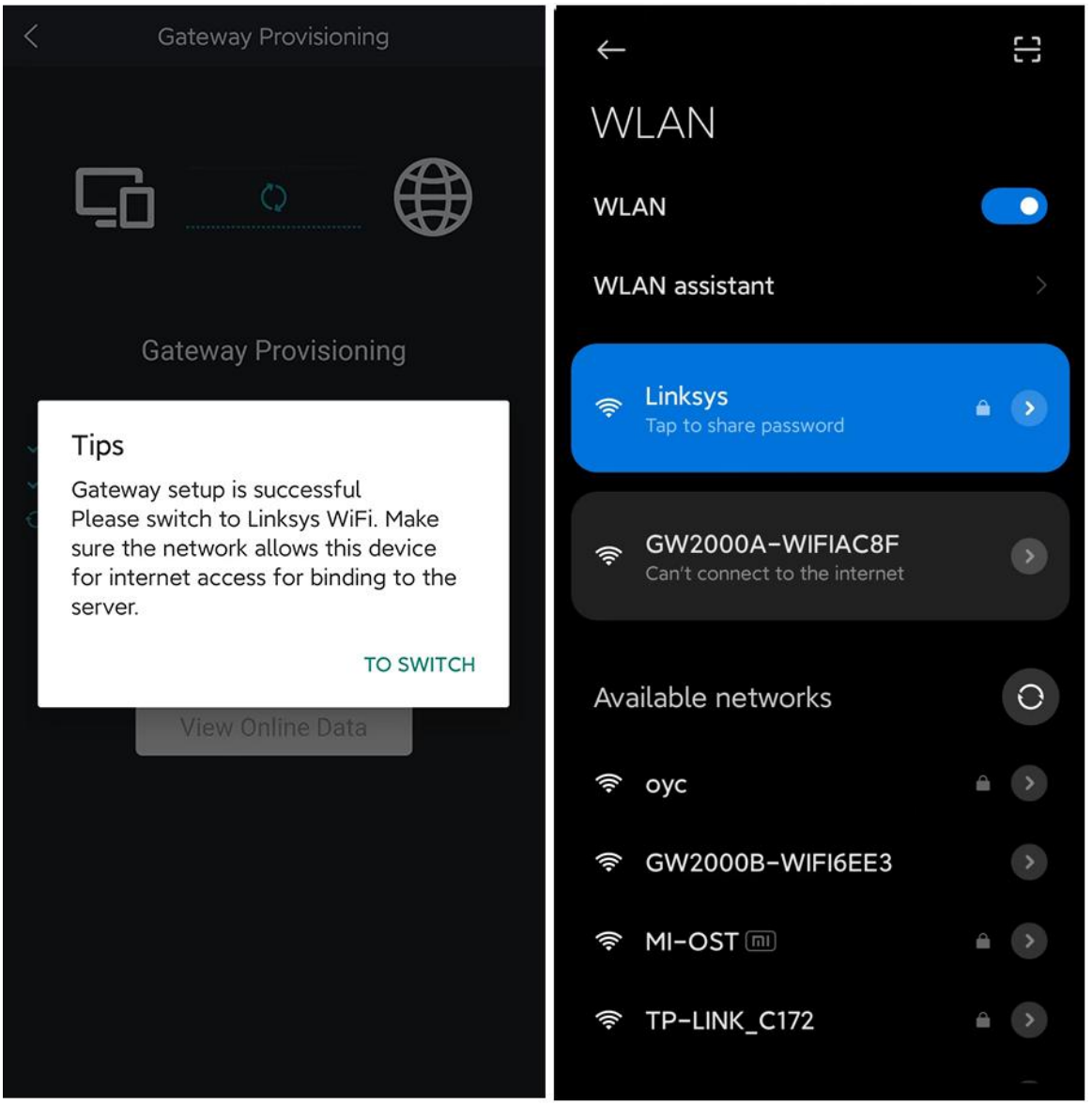

Gateway Provisioning
Gateway Provisioning
Tips
Gateway setup is successful
Please switch to Linksys WiFi. Make sure the network allows this device for internet access for binding to the server.
TO SWITCH
View Online Data
WLAN
WLAN
WLAN assistant
Linksys
Tap to share password
GW2000A-WIFIAC8F
Can't connect to the internet
Available networks
oyc
GW2000B-WIFI6EE3
MI-OST
TP-LINK_C172

Figure 12

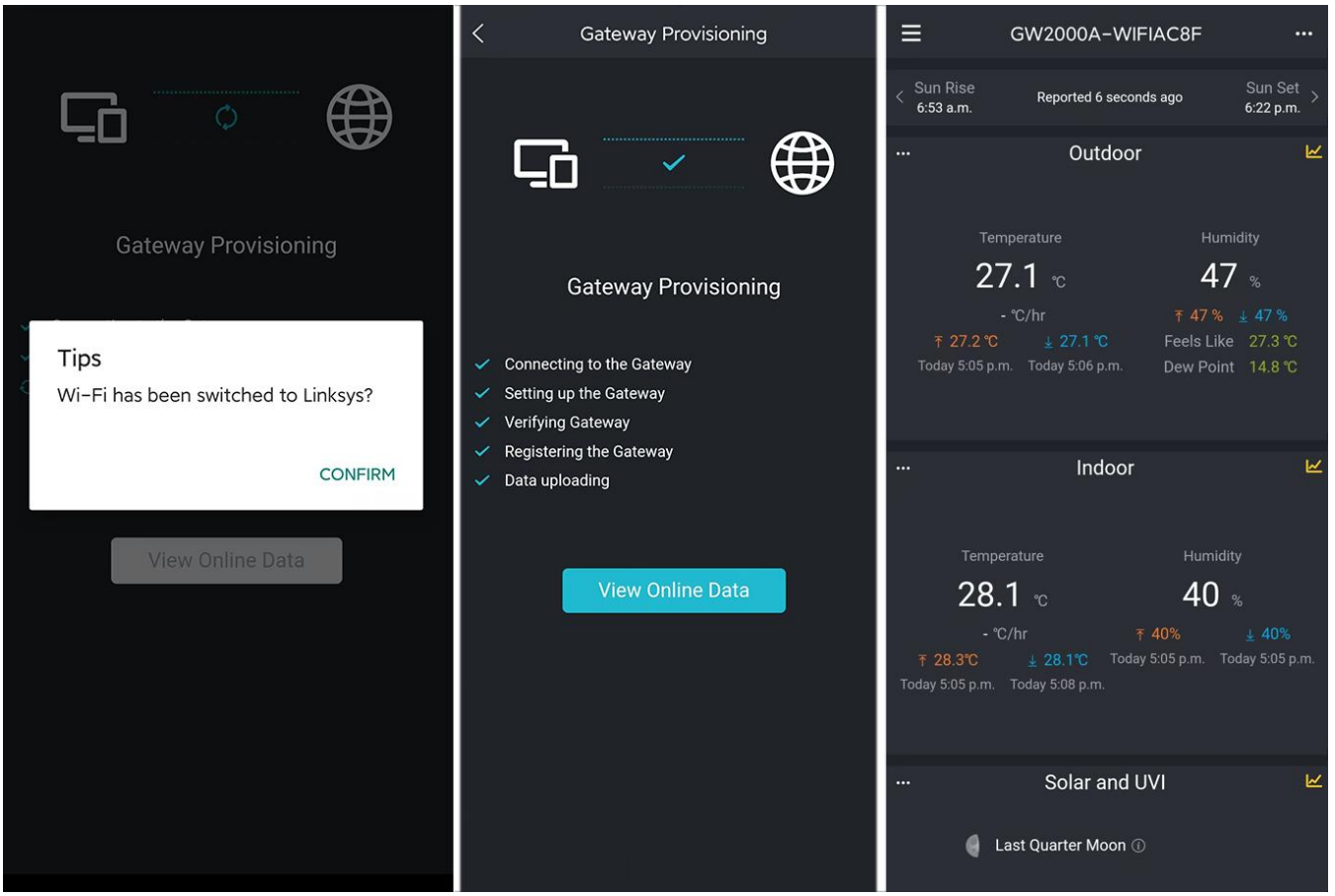


Figure 13

3.3.3 Manually Adding

1. Get the MAC address

MAC address is located on the sticker at the bottom of the GW2000. Copy it from the embedded webpage.

2. Add the GW2000 to your Ecowitt Account

Open Ecowitt App, click "My Devices", and click "Add New Devices", choose the GW2000's icon to configure the Manually Adding:

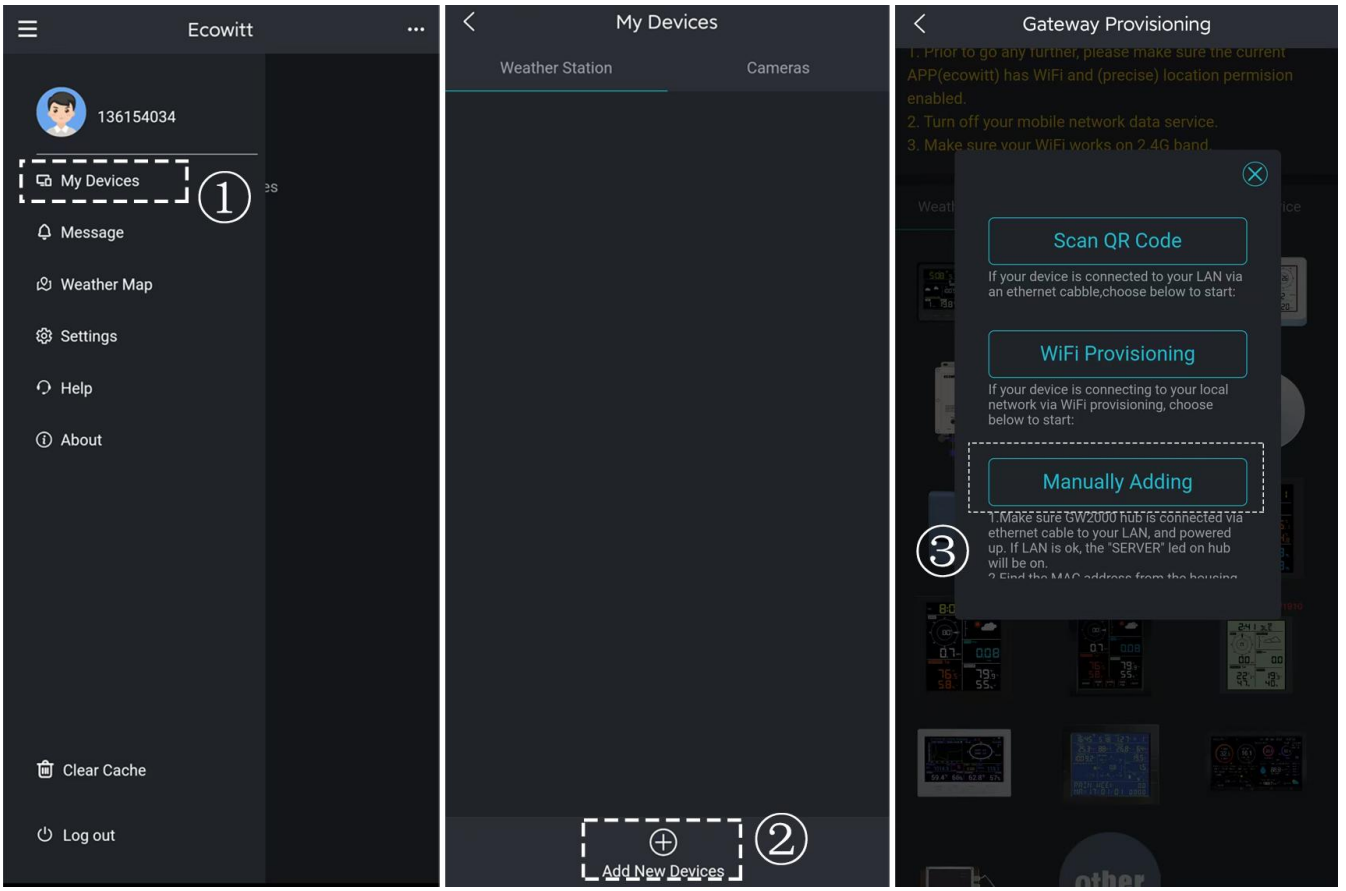


Figure 14

2. Enter the MAC address, edit the Device Name, click "Save," and you can view the data on the App.

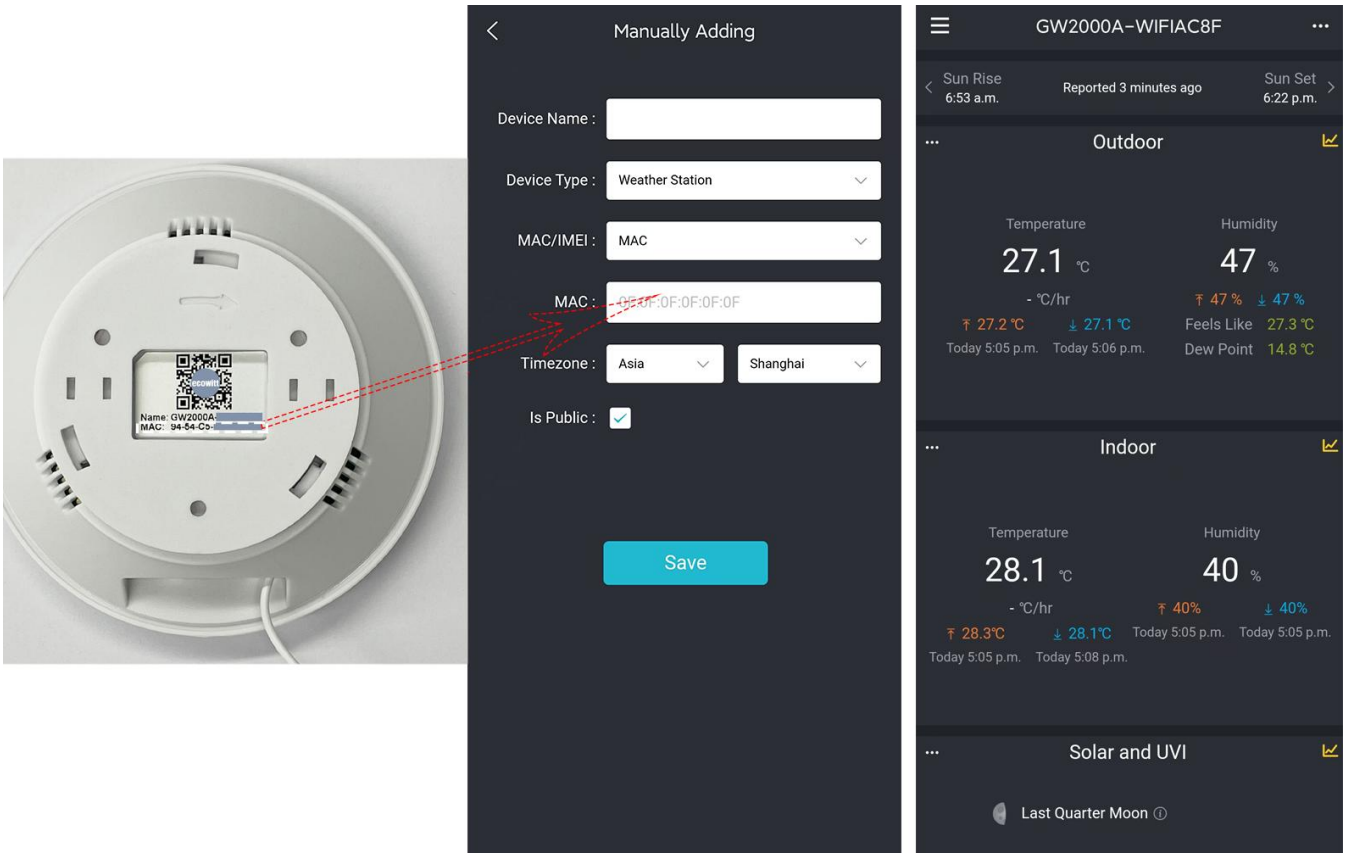


Figure 15

4 Setup your new device on the Ecowitt APP

4.1 Device Location, Timezone, DST, and Data Public & Firmware Upgrade settings

After you complete the Wi-Fi configuration, please follow these steps for the Firmware upgrade, Device's precise location, Timezone, DST (Daylight Saving Time), and Data public settings.

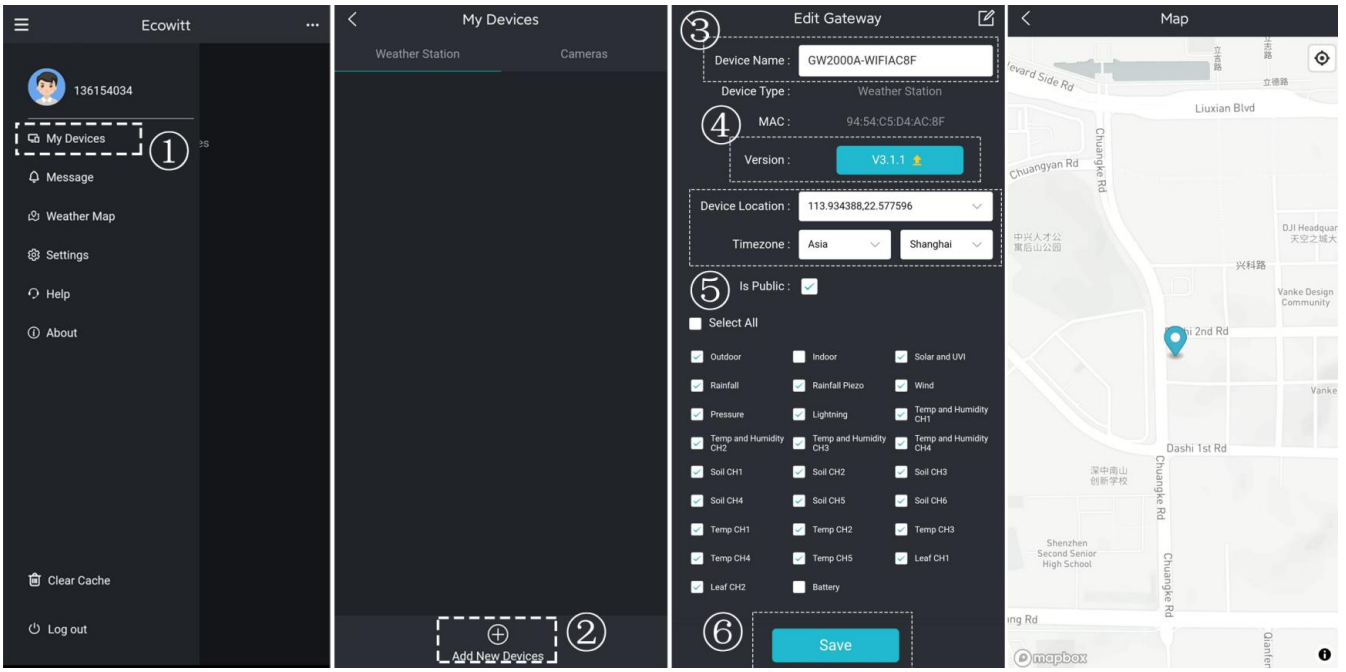


Figure 16

1. Click on "My Devices".

2. Click on the "…" icon in the upper right corner of the gateway.

3. You can edit your device name here if the default name needs to be changed.

4. Click version button to check latest firmware version.

5. Set the Device's precise location and Timezone on this interface. Tick "Auto DST" and "Is Public" when necessary.

6. Click "Save", then reboot the device, it will automatically synchronize time and DST.

Note: The current firmware version is displayed here. If an update is available, a "yellow arrow" will appear next to the version number. Tap on the version button to start the firmware upgrade.

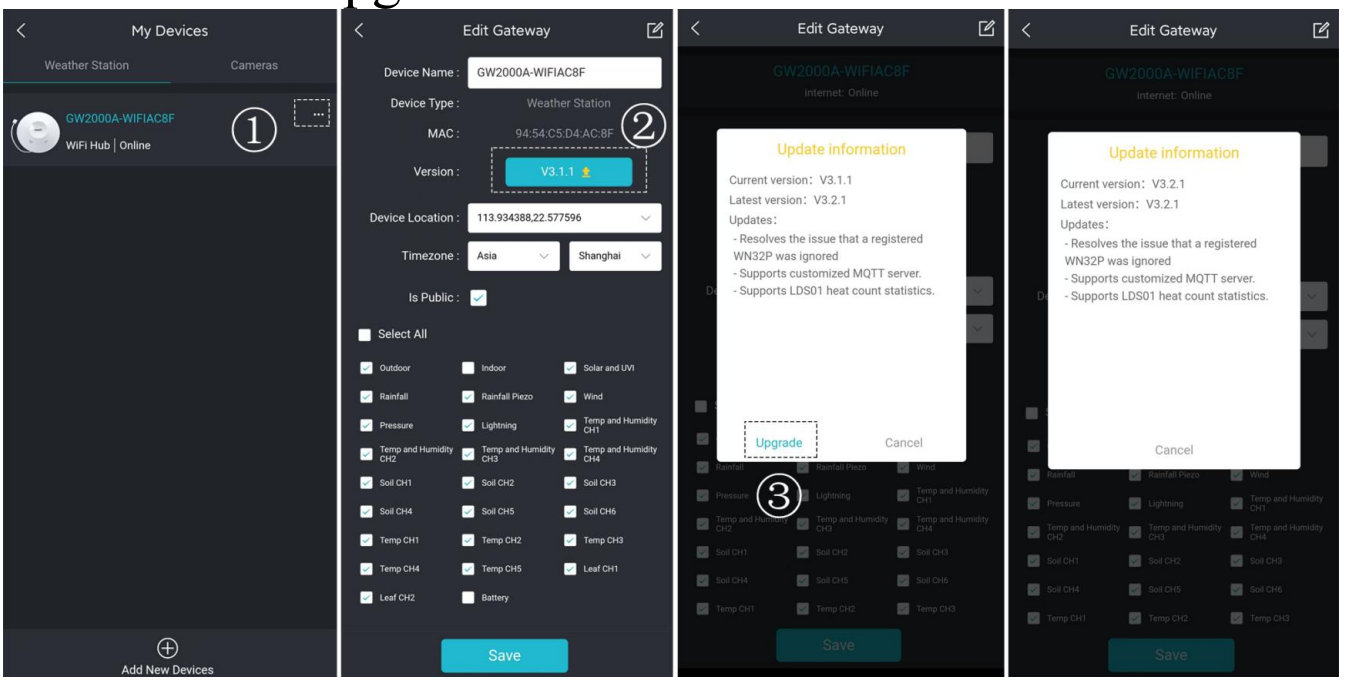


Figure 17

5 Devices Management on Ecowitt APP

5.1 How to Delete GW2000

Long press the GW2000 till the delete icon appears, press it, then choose Delete or Reset.

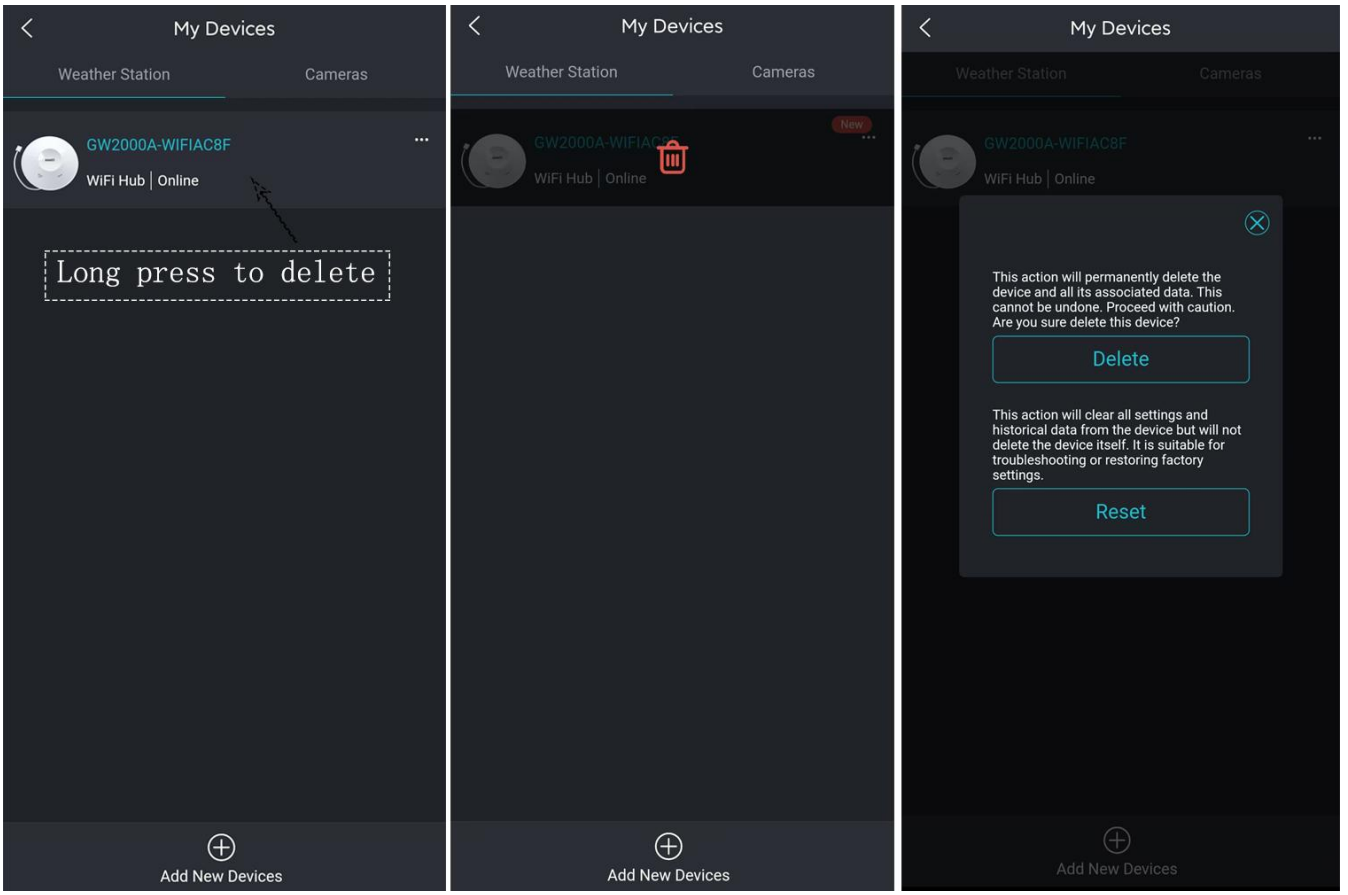


Figure 18

5.2 Manage Sensors

① Add a Sensor

To pair the optional sensors (refer to **Section 14 Optional Sensors** for more optional sensors) with the GW2000, please do as follows:

1. Place the optional sensor next to the receiver.

2. Power the sensor on and wait for 1-2 minutes.

3. Check whether the GW2000 will pick up the sensor data automatically and display it on the app.

4. If data is not received, try the following: Make sure the phone and GW2000 are connected to the same Wi-Fi network, open the Ecowitt App, find Sensor ID, and enter the Edit Gateway page.

5. In the Edit Gateway page, find the sensor you want to pair - select the ID number box and register it.

6. Once successful, you may return to the main interface to check the data.

7. If you know exactly the sensor ID, and want the GW2000 to pair that sensor only, you may enter the sensor ID, and save the change to make it effective.

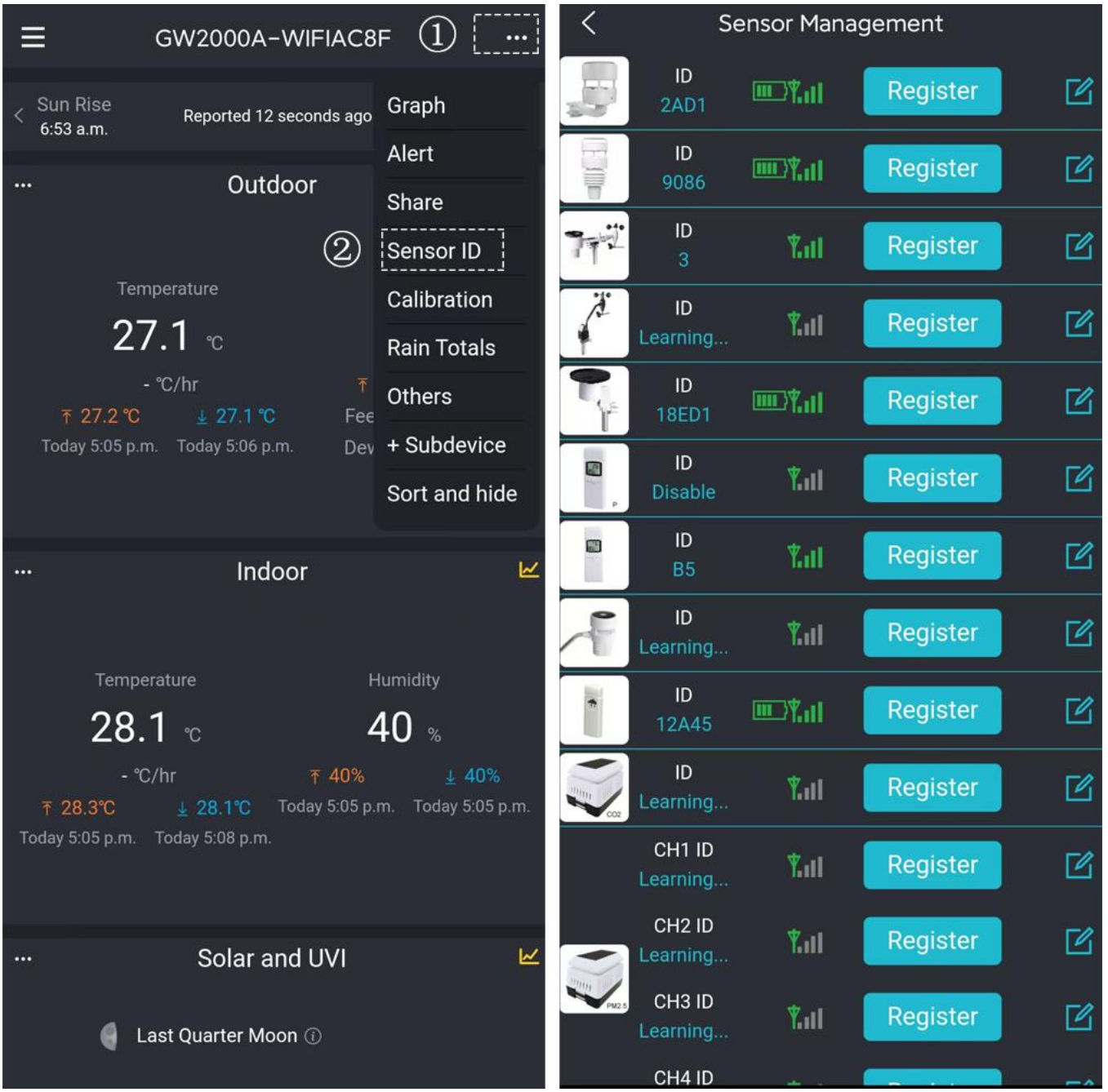


Figure 19 Sensor ID Page

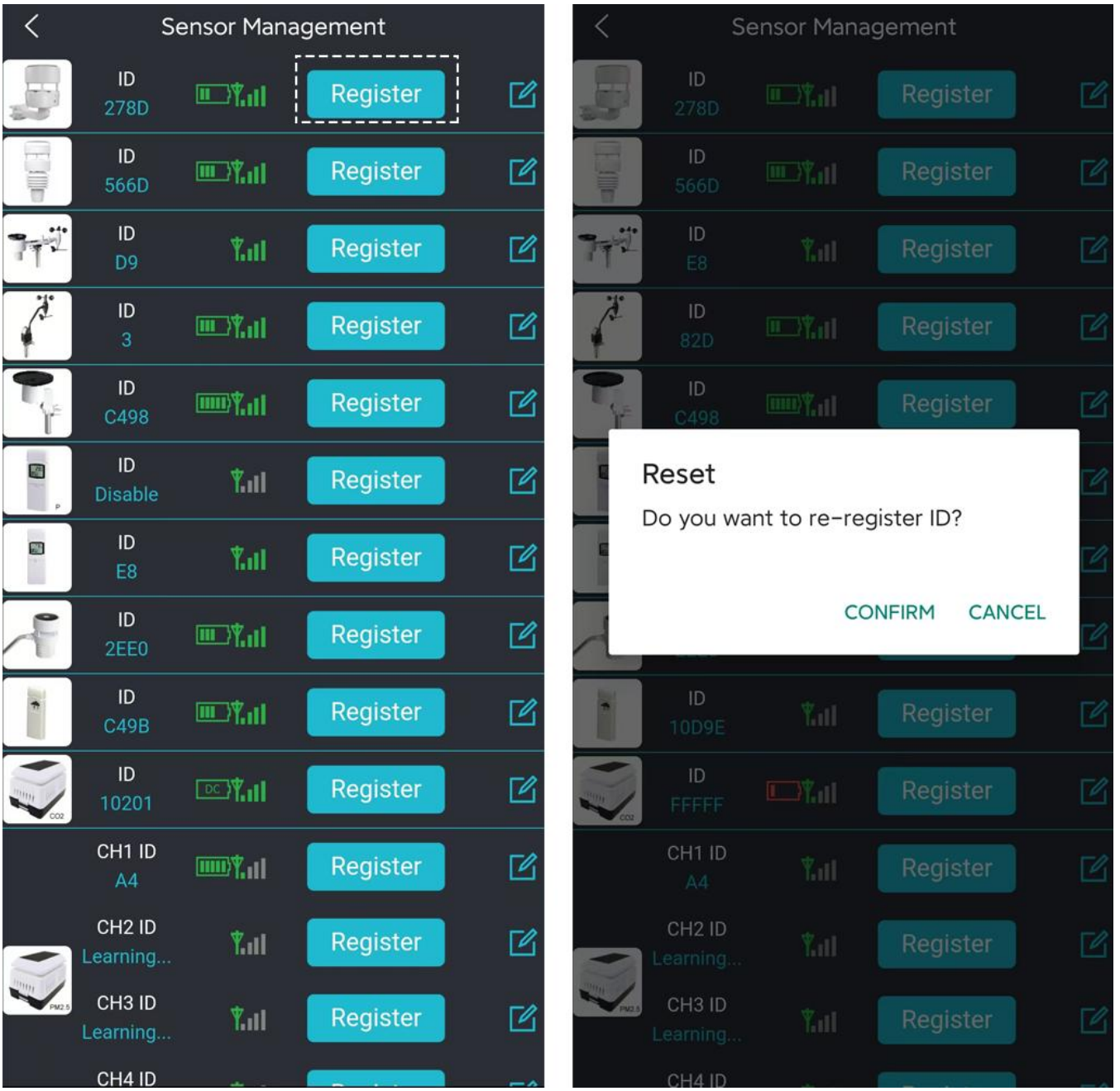


Figure 20 Re-register Sensor

② Disable (Stop) a Sensor

Suppose you have more than one gateway to receive data from multiple transmitters. In that case, the following actions can help you prevent the gateway from

automatically receiving data from other already registered transmitters.

If you have 2 or more transmitters of the same model, and GW2000 receives data from one of them, you want to receive data from another.

1. Tap the icon of editing.
2. Manually input the sensor ID of the transmitter you wish to receive on this interface
3. Set its status to Enabled.
4. Tap "Save" to receive data successfully.
5. When the GW2000 receives data from an unwanted transmitter.
6. Tap the icon of editing.
7. Manually input the default sensor ID to lock onto this sensor.
8. Set its status to Disabled.
9. Tap "Save" to apply this lock immediately.

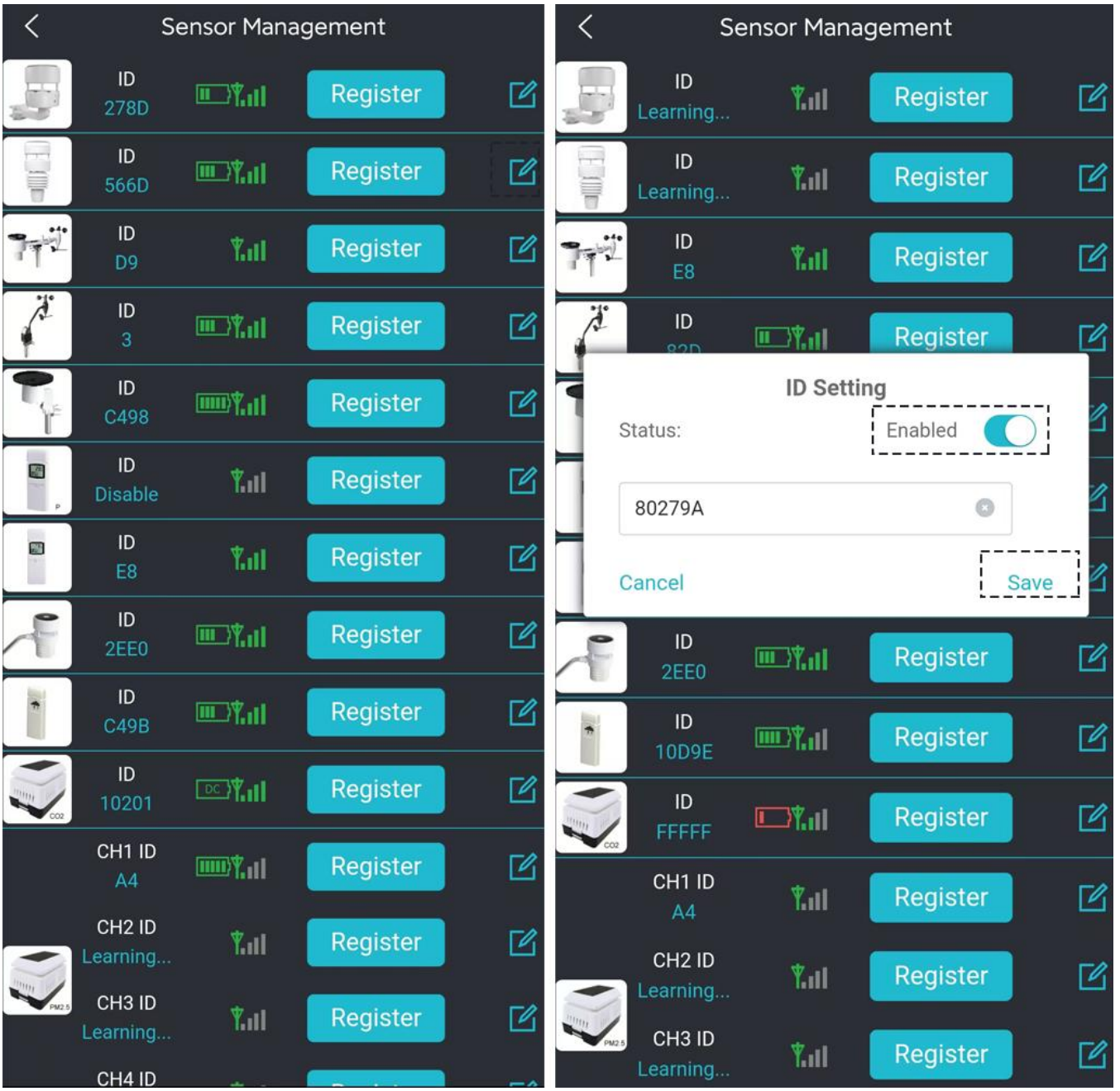
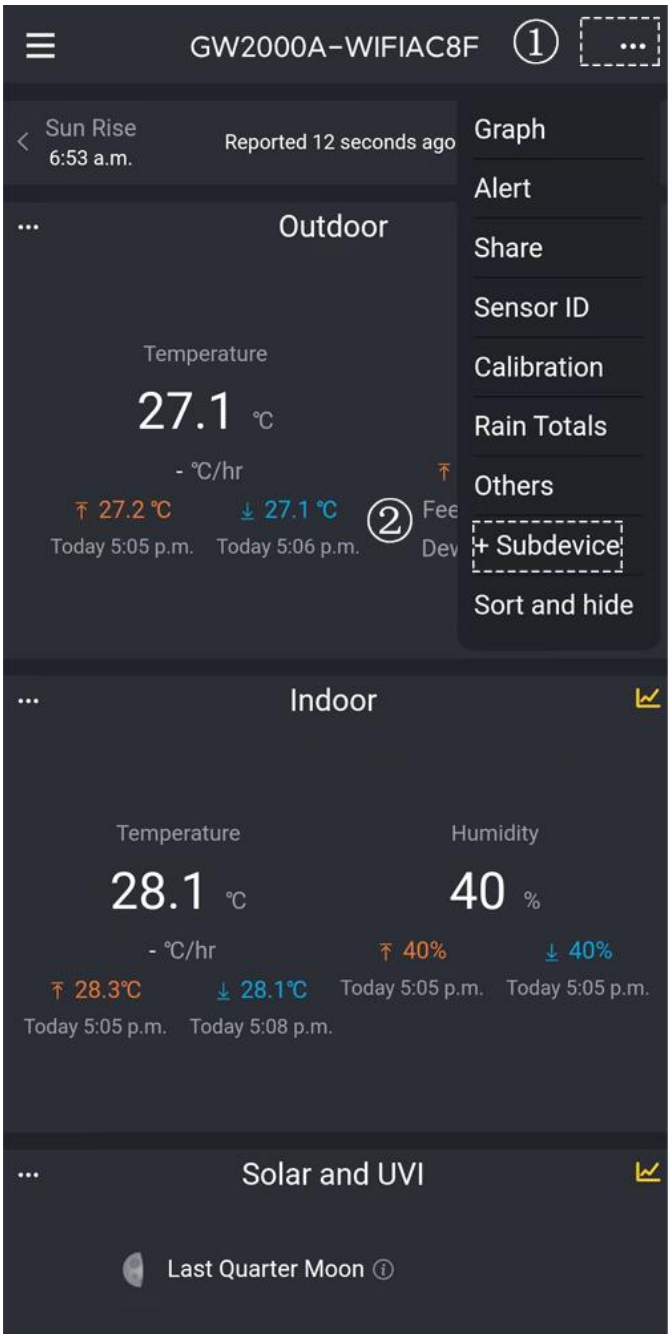
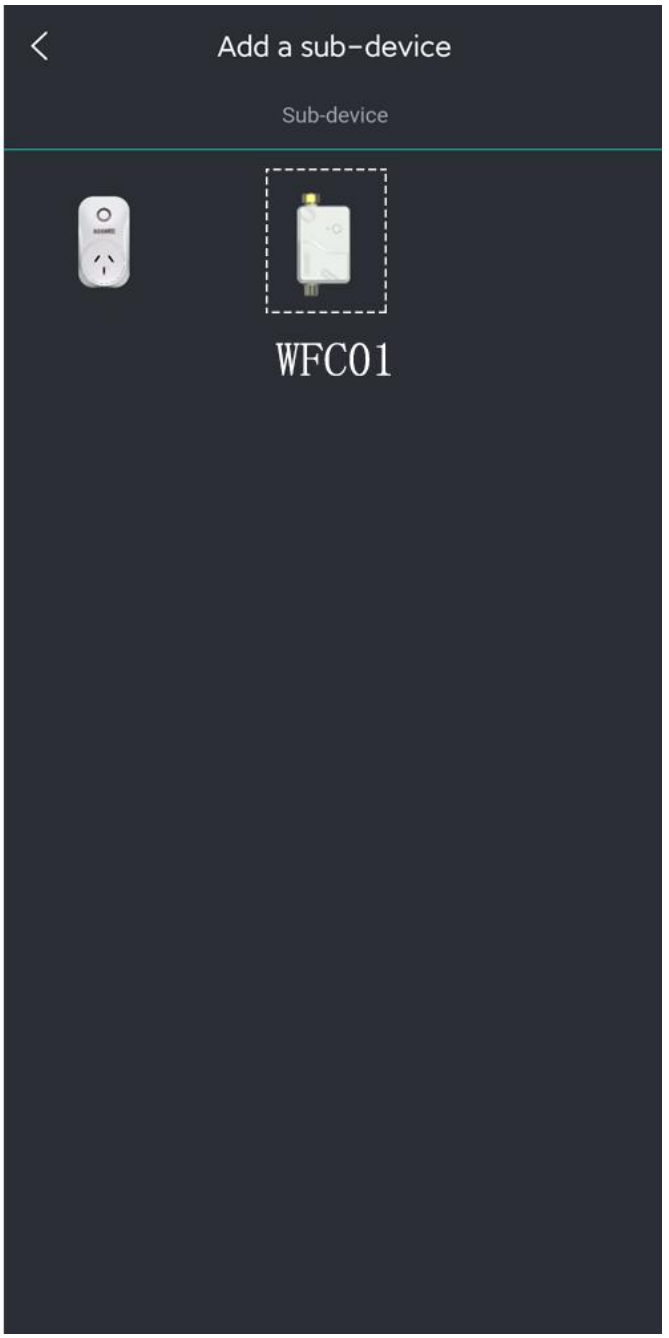


Figure 21 Disable a Sensor

③ Add a Sub-device

GW2000 is the latest generation gateway that supports smart control devices. It can operate WFC01 and AC1100 and following smart equipment. Below, we will demonstrate the connection methods for GW2000 with WFC01 or AC1100.





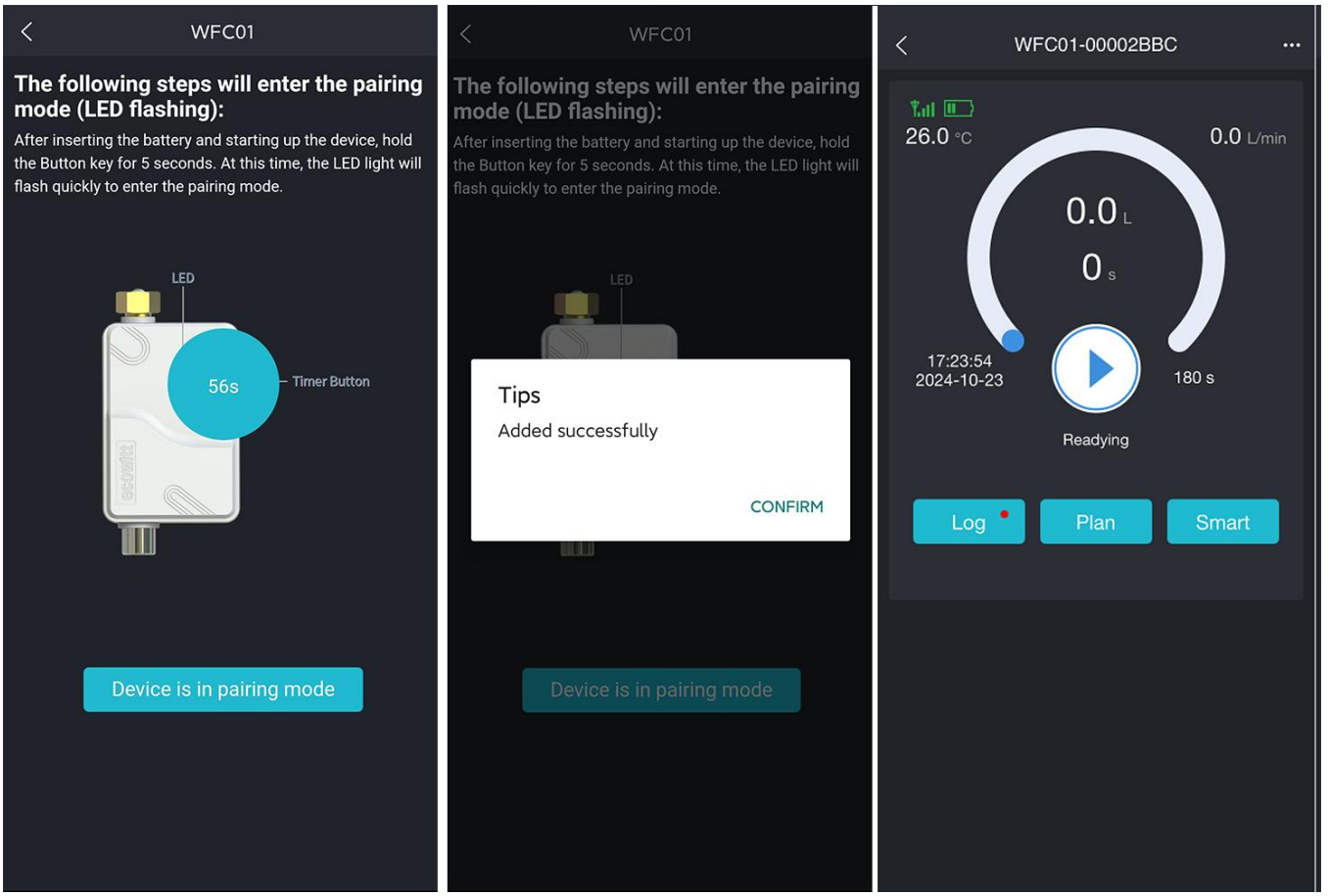


Figure 22 Connecting WFC01/AC1100

6 Mounting

1. It can be placed flat in an indoor location that can receive an RF signal, but it cannot be placed in a place that isolates signals or interferes with magnetic fields.
2. A detachable fixing plate at the bottom; the holes with three screws can be fixed on the wall.

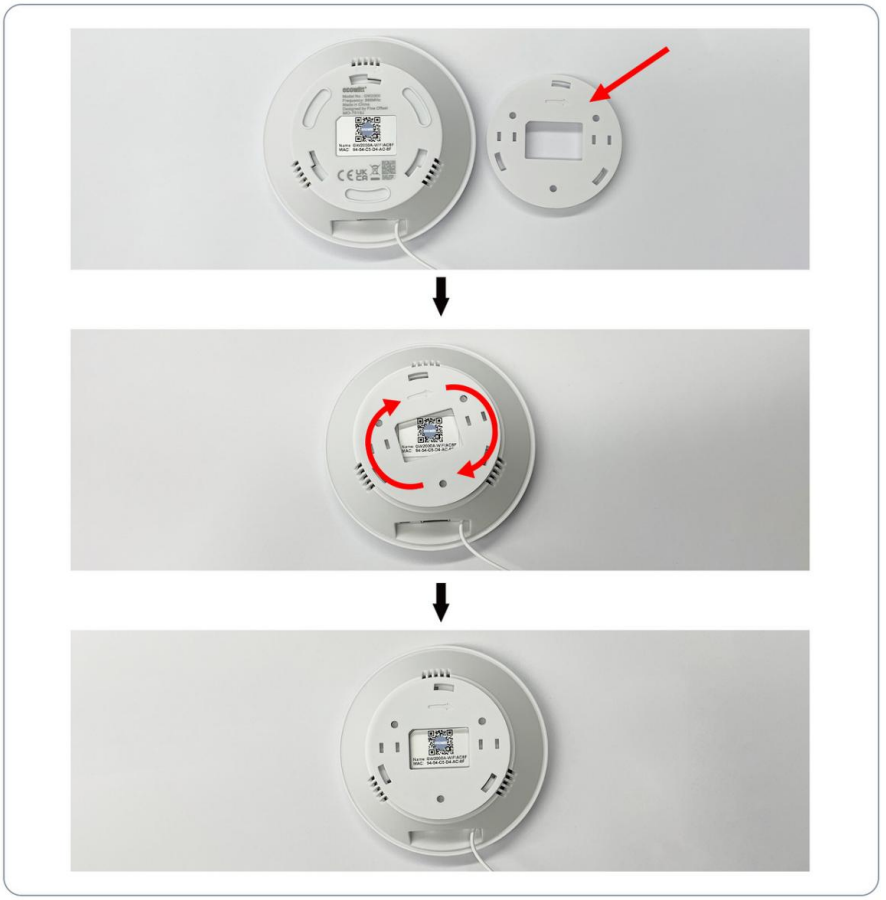


Figure 23

7 Other Ecowitt APP Setting

7.1 Calibration on Ecowitt APP

If you have data from a relatively accurate weather station. You can use the data to do the calibration.

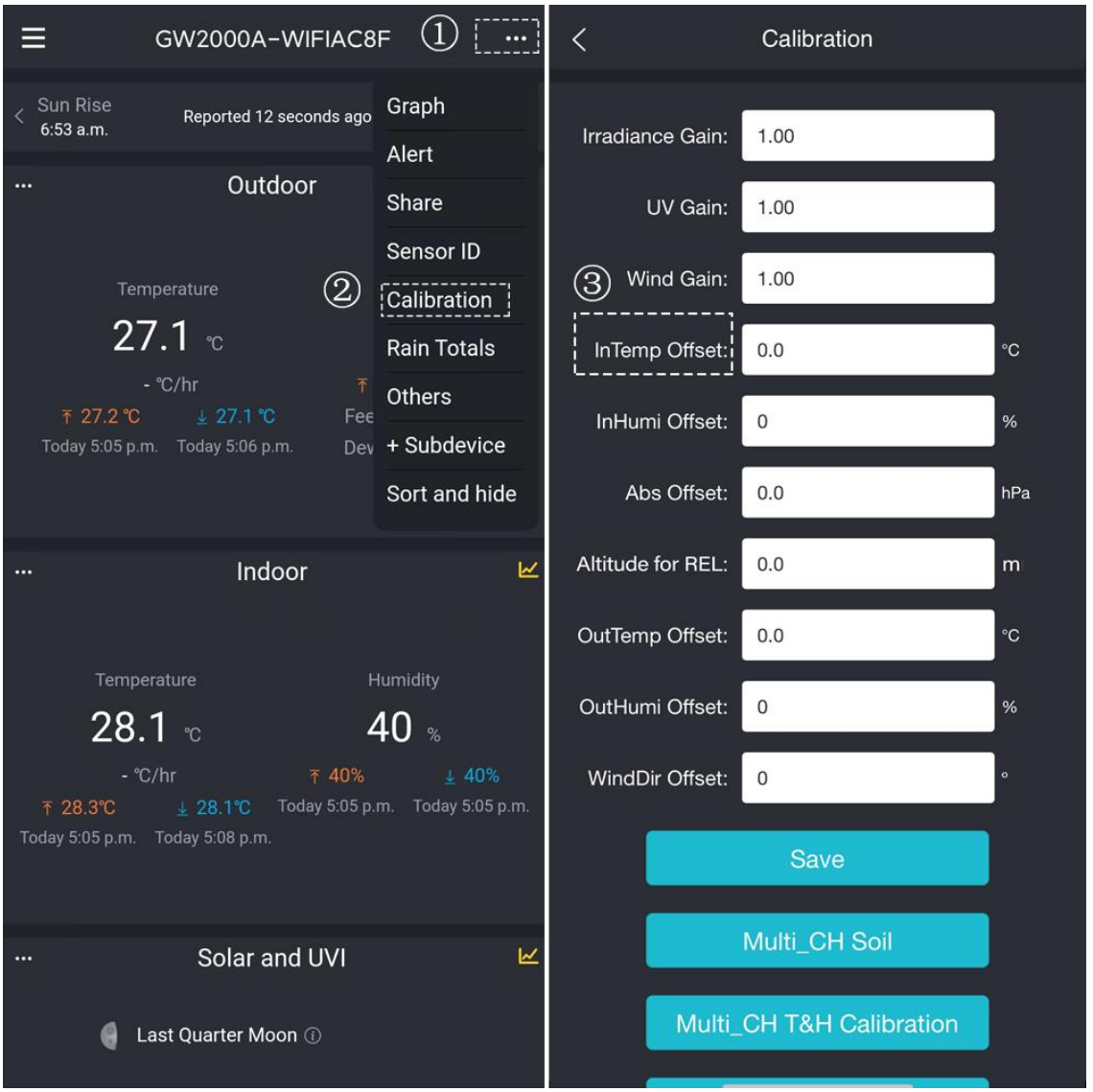


Figure 24

1. Make sure your mobile device is connected to the same Wi-Fi network.

2. Click "…" on the top right corner and choose "Calibration".

3. For a certain parameter. Calculate the offset of data from the accurate weather station and ecowitt sensor.

4. Fill in the offset from step 3, and click Save.

7.2 Rain Settings on The Ecowitt APP

① Rainfall Data Priority Setting

If you have multiple rainfall sensors, you can set the priority to display the data from one of them.

You can choose between a Traditional Rain Gauge or a Piezoelectric Rain Gauge.

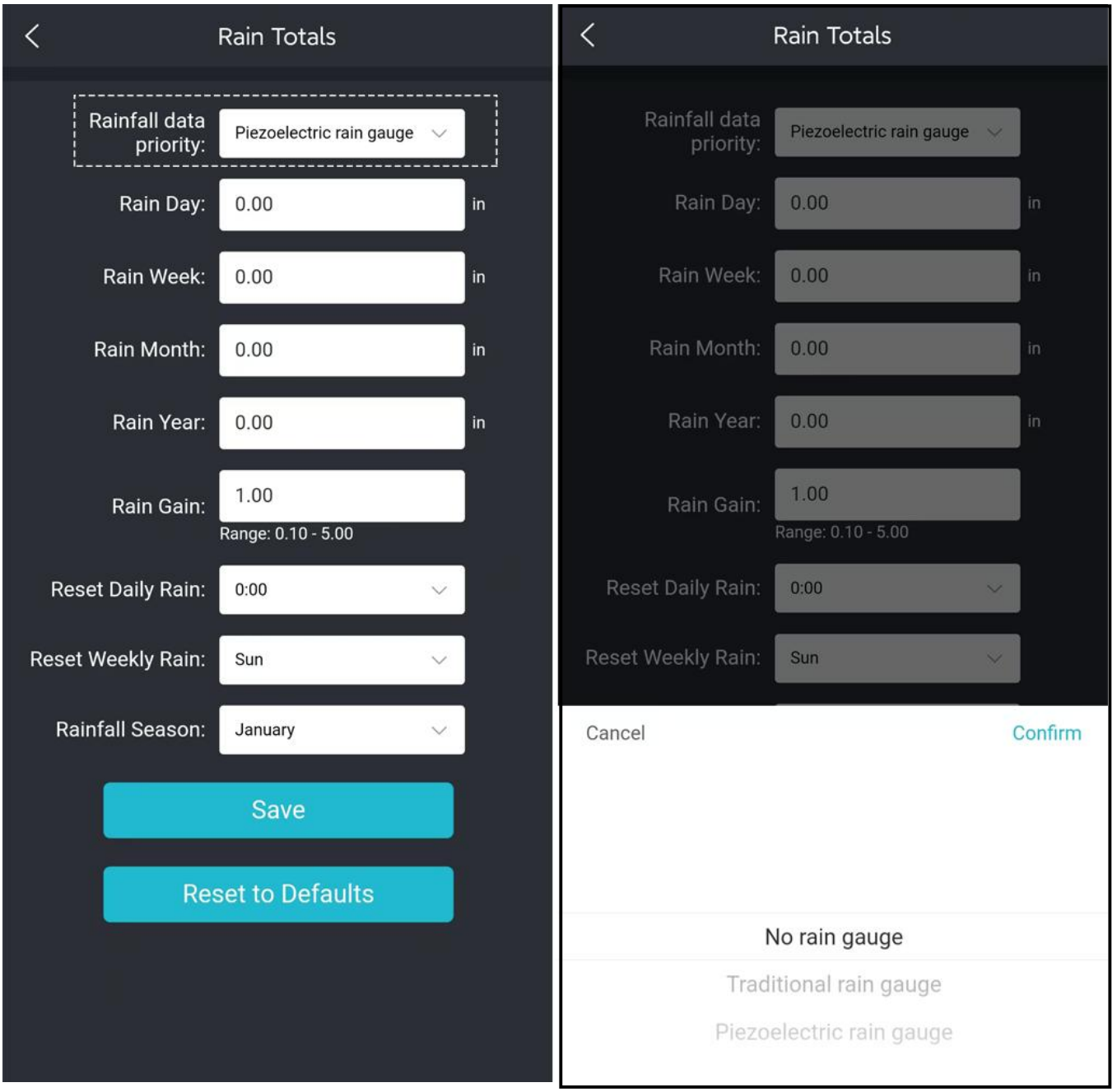


Figure 25 Rainfall Data Priority Setting

② Rain Totals Initial Value

Users can set the Rain for the current year, month, or week starting values. This is useful when you start using

this system instead of another one that has accumulated data, or simply if you know the values to be incorrect.

1. Make sure your mobile device is connected to the same Wi-Fi network.
2. Click "···" on the top right corner and choose "Rain Totals".
3. Fill in the correct Rainfall value, click Save.

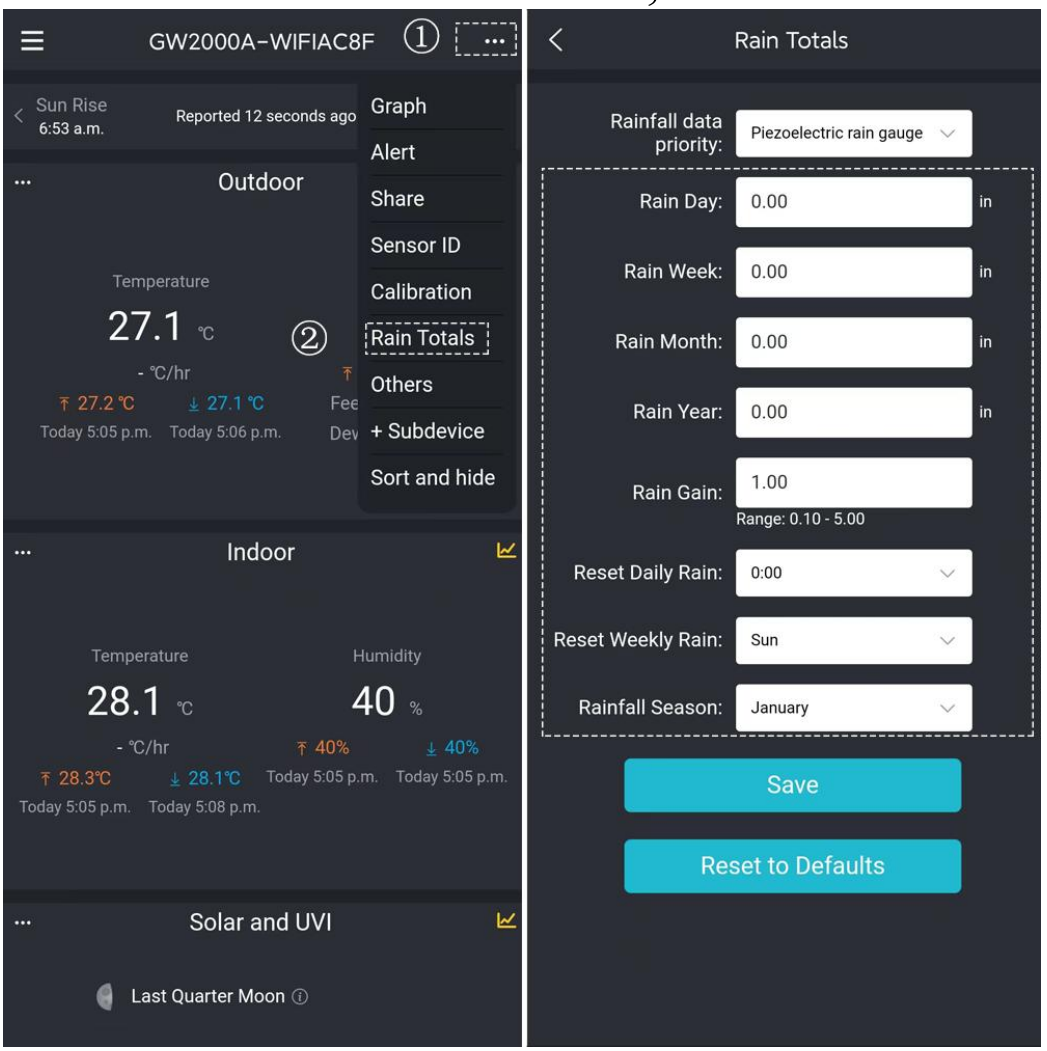


Figure 26

7.3 Unit and Other Settings

Click "Settings", and select the units for the different parameters you want.
You can see some more settings on this interface.

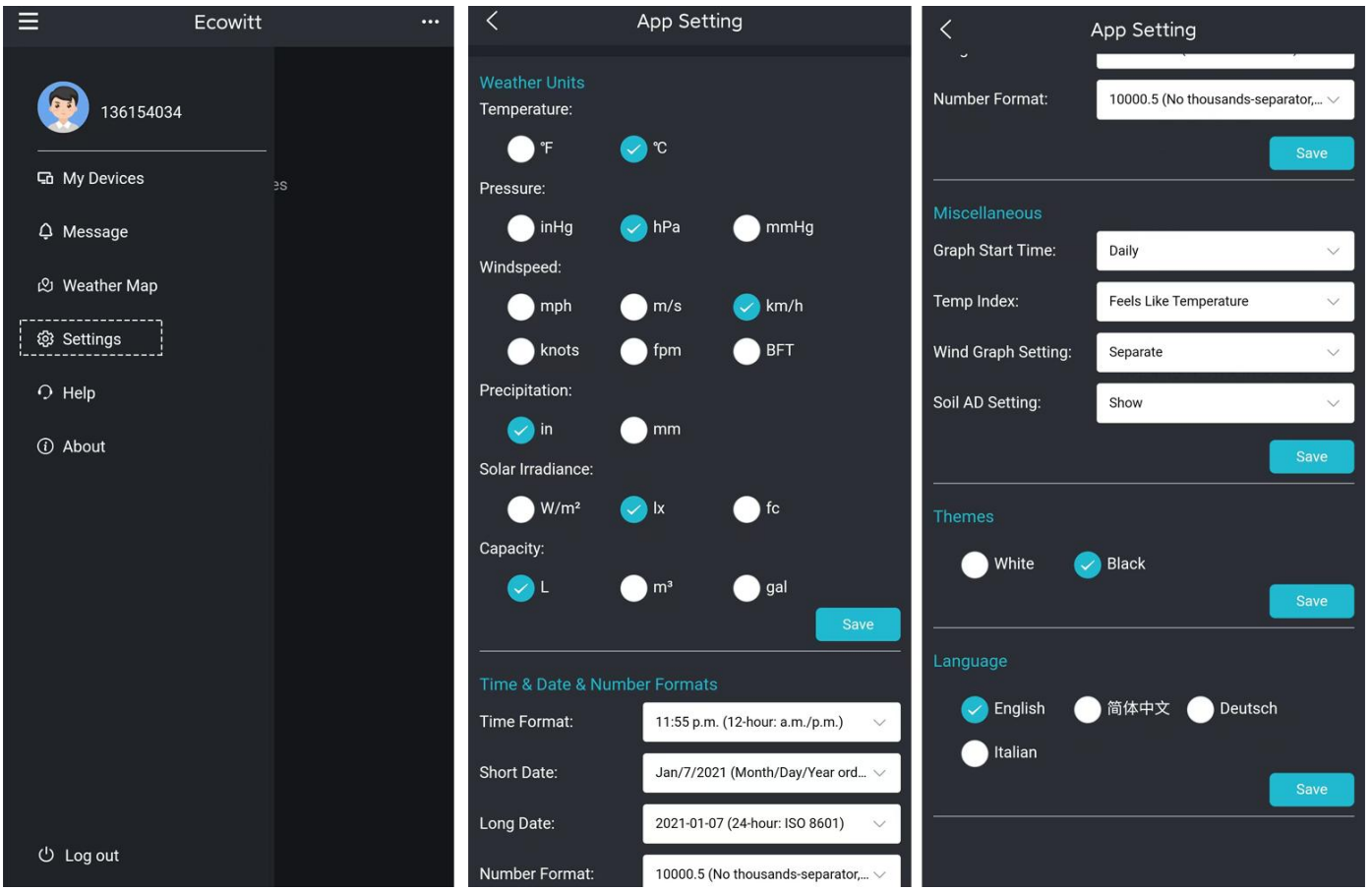


Figure 27 App Setting

8 Use on Web UI

The Web UI is an essential tool for managing the device. You can use it to check the network connection status, set up weather services (WU, WOW, Weather Cloud, custom server), view live data, manage sensors, make calibrations, and more.

8.1 How to Access the Web UI

Holding the "Reset" Button for 5 seconds will turn on its Wi-Fi AP for 5 minutes. Connect to the GW2000's AP. Enter 192.168.4.1 in the browser. Log in with the default username and password, which is blank. If your gateway is connected to a local network, the WebUI can also be reached via the IP address the gateway has received or has been.
Settings changes, such as registered Sensor IDs, are saved three minutes after power-up. However, changes made via the web interface are saved immediately and retained even if power is lost.
1.WiFi configuration
Ensure that your mobile phone or laptop is connected to the GW2000’s hotspot emitted by the device.

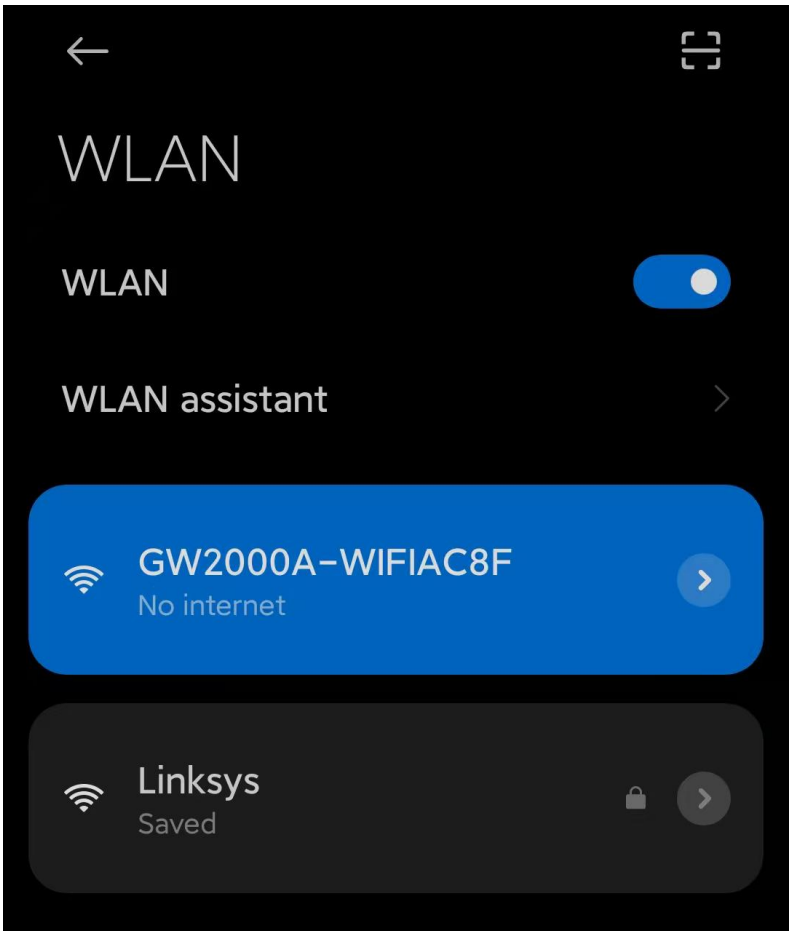


Figure 28

3. Open your web browser and enter the following URL: 192.168.4.1. By default, no password is set. Click Login.

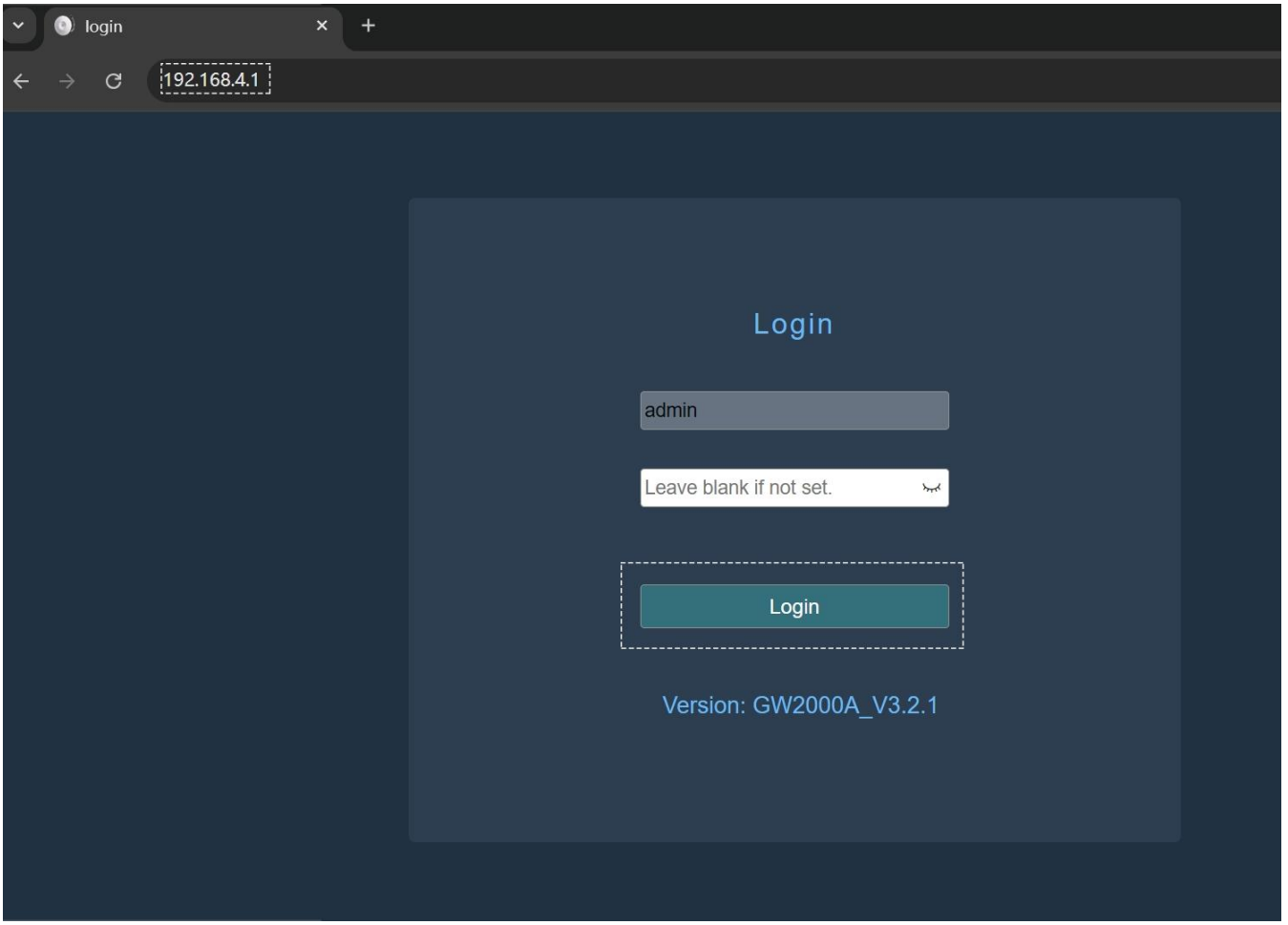


Figure 29

4. Click Local Network. Input the name and password of the router to which you want to connect. Click Apply.

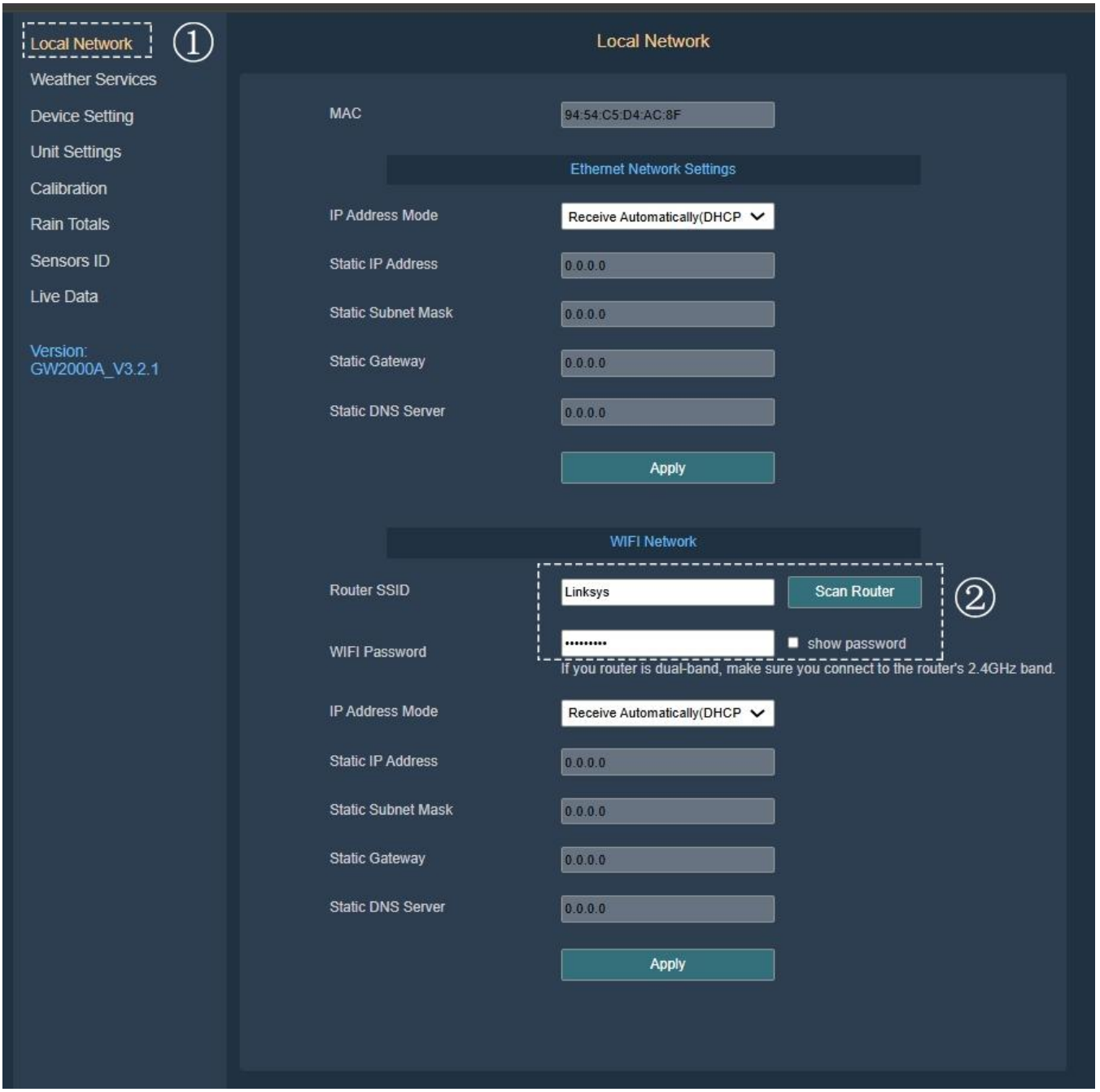

Local Network
①
Weather Services
Device Setting
Unit Settings
Calibration
Rain Totals
Sensors ID
Live Data
Version:
GW2000A_V3.2.1
Local Network
MAC
94:54:C5:D4:AC:8F
Ethernet Network Settings
IP Address Mode
Receive Automatically(DHCP
Static IP Address
0.0.0.0
Static Subnet Mask
0.0.0.0
Static Gateway
0.0.0.0
Static DNS Server
0.0.0.0
Apply
WIFI Network
Router SSID
Linksys
Scan Router
②
WIFI Password
show password
If you router is dual-band, make sure you connect to the router's 2.4GHz band.
IP Address Mode
Receive Automatically(DHCP
Static IP Address
0.0.0.0
Static Subnet Mask
0.0.0.0
Static Gateway
0.0.0.0
Static DNS Server
0.0.0.0
Apply

Figure 30

8.2 Local Network on Web UI

This page supports viewing or setting：
(1) MAC address
(2) WLAN: WLAN is the function of the gateway's Wi-Fi connection router, which is disabled by default
(3) IP Address Mode: Receive Automatically (DHCP) or Static

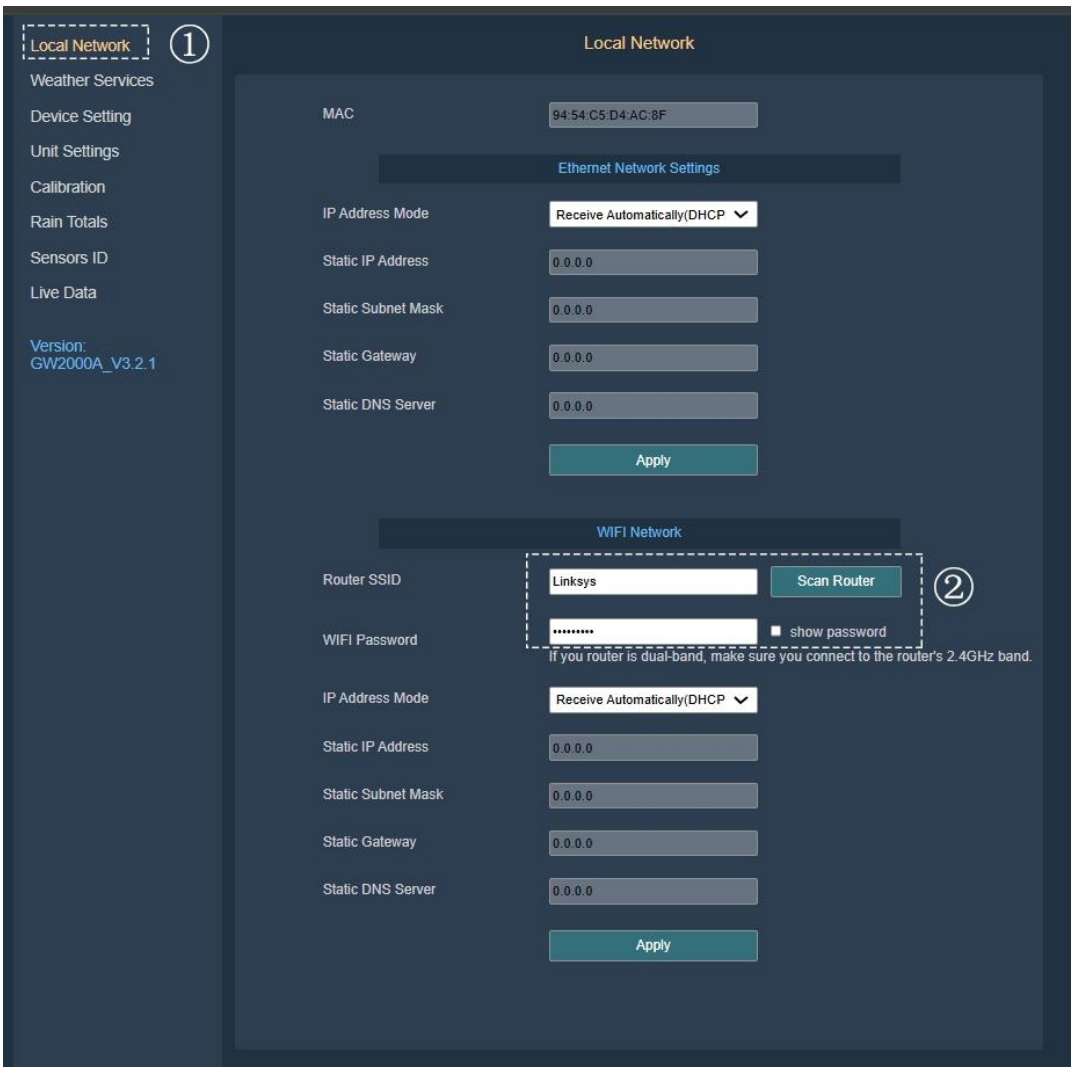


Figure 31

8.3 Device Setting on Web UI

This page supports viewing or setting:

(1) Device sensor reception frequency (view only)

(2) Automatic Frequency Control (AFC): turn this option on when your location is busy on the sensor radio spectrum to improve signal reception.

(3) Temperature Compensation: Turn on this option to minimize sun light influence on outdoor temperature measurement if the outdoor temperature and humidity sensor installation site is not ideal. This option works with sensor arrays like WS69, WS80, WS90 and WS85.

(4) Auto Time zone: Your time zone setting on ecowitt.net will be applied here.

(5) Automatic firmware upgrade

(6) Login & AP Password

(7) Restore default: The checkbox takes effect immediately after saving and is not lost when the power is dropped.

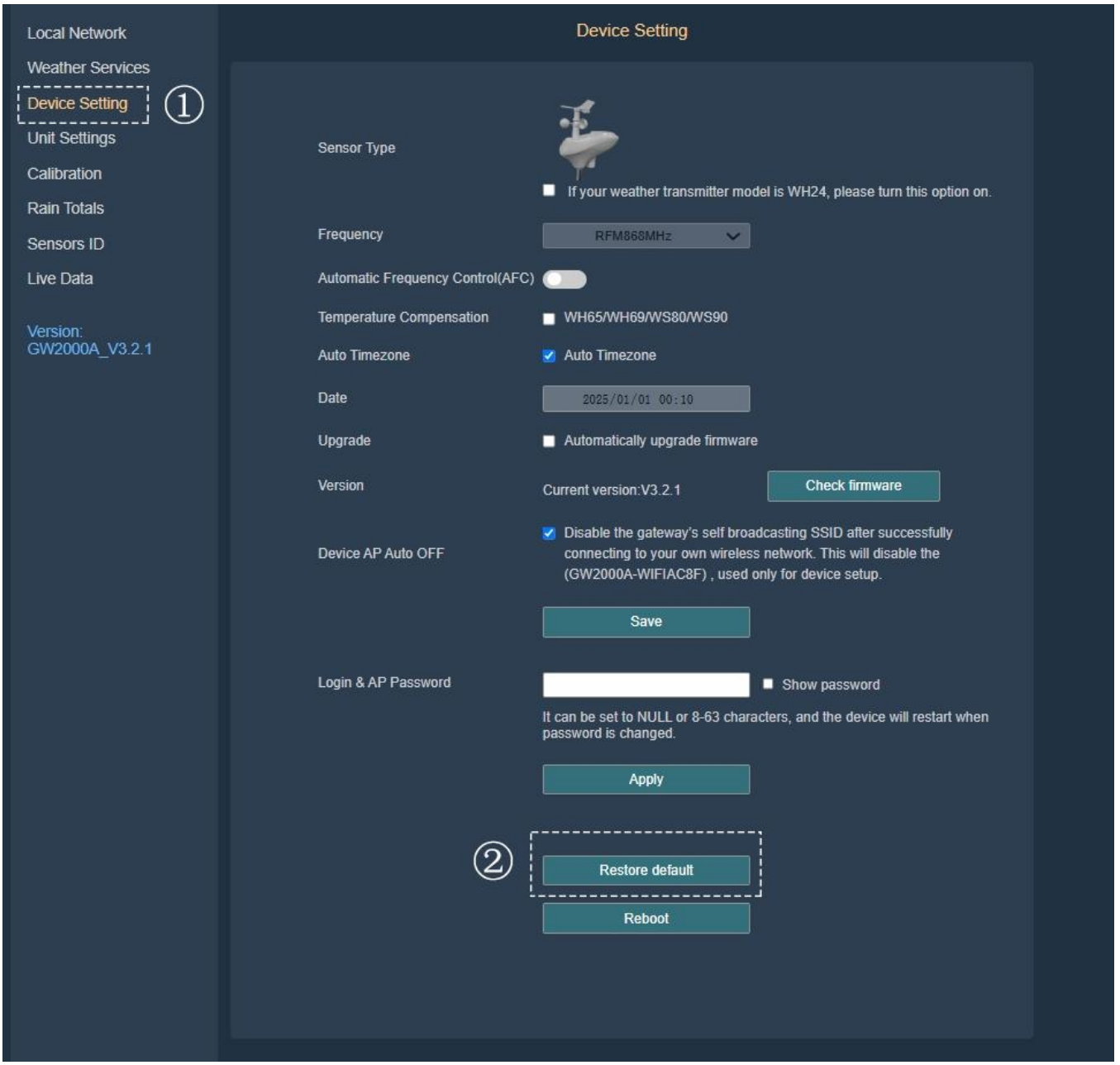


Figure 32

8.4 Firmware Upgrade Via Web UI

If you choose "Automatically upgrade firmware" on the web page 192.168.4.1, GW2000 will reboot automatically

whenever there is a new firmware. (Automatic update interval is 24 hours).

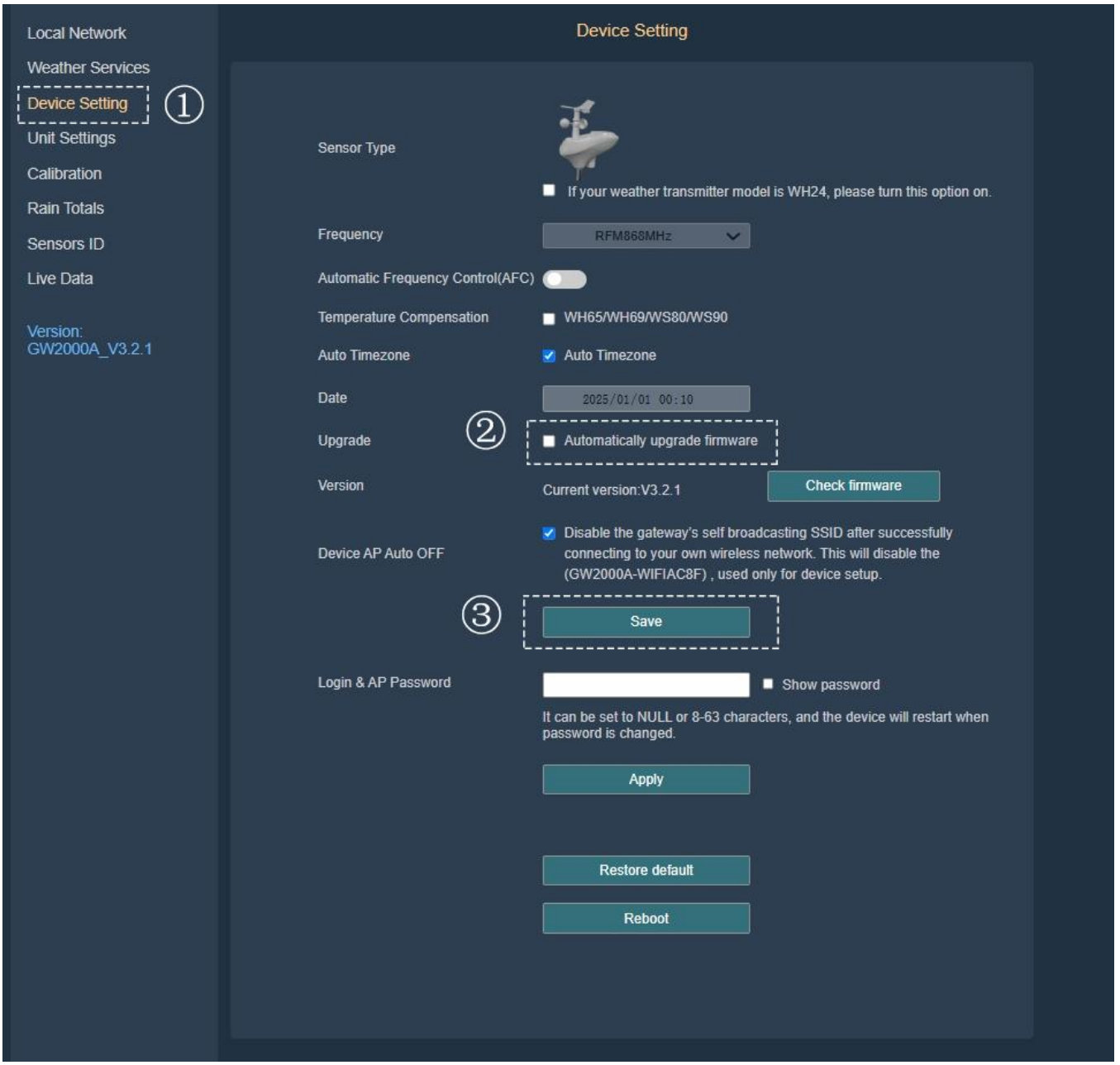


Figure 33 Firmware Upgrade via Web Page

8.5 Unit Settings on Web UI

Supports the following unit settings:
(1) Temperature: ℃,℉
(2) Pressure: hPa, inHg, mmHg
(3) Wind: m/s, km/h, mph, knots
Note: Lightning distance units are the same as wind speed units:

Wind Speed Unit	Lightning Distance Unit
m/s, km/h, BFT(BFT can only be set in App/ website)	km
knots	nmi
mph, fpm(fpm can only be set in App/website)	mi

Table 3

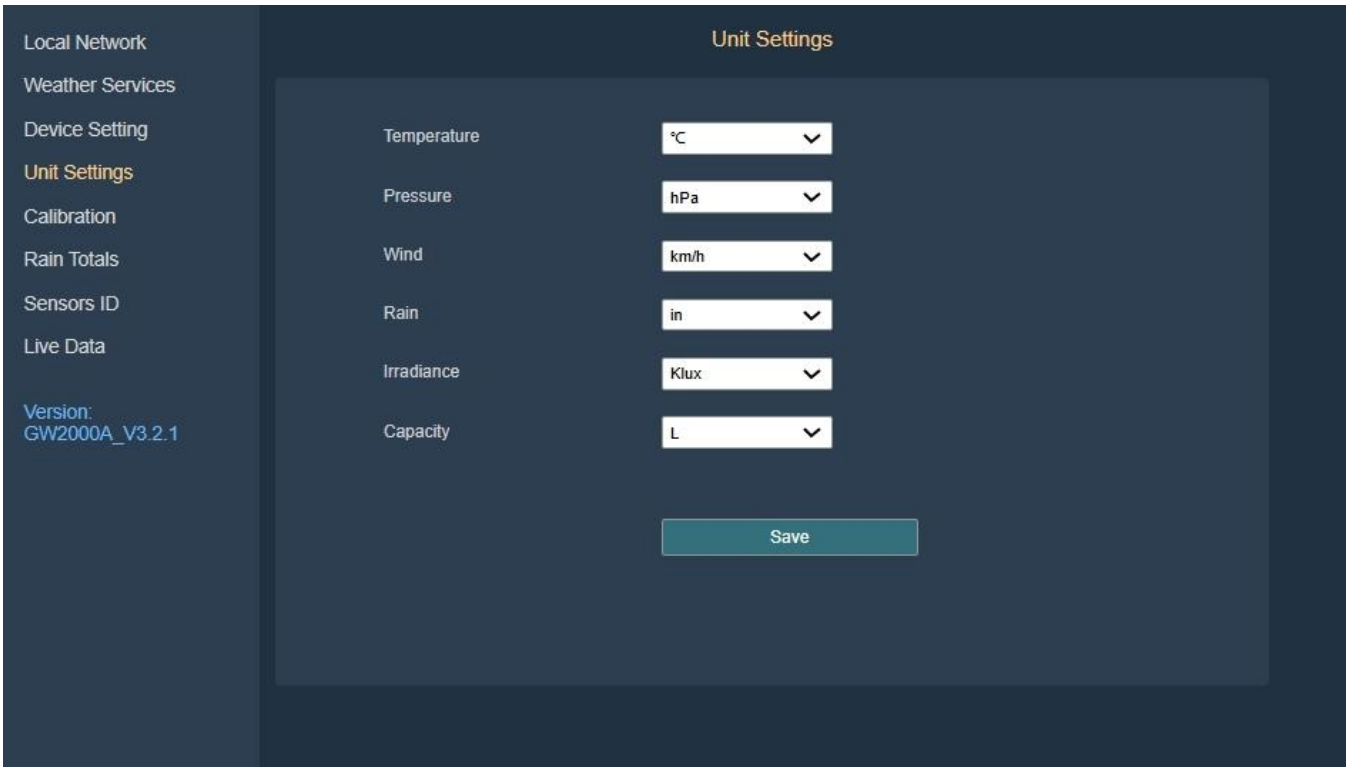


Figure 34

8.6 Calibration on Web UI

This page supports the following data calibration:
(1) Solar Irradiance

(2) UV

(3) Wind Speed

(4) Indoor Temperature

(5) Indoor Humidity

(6) Absolute Pressure

(7) Altitude for Relative Pressure

(8) Outdoor Temperature

(9) Outdoor Humidity

(10) Wind Direction

(11) Soil Moisture

(12) Multi-Channel Temperature & Humidity

(13) Multi-Channel Temperature

(14) PM2.5

(15) AQIN

(16) Laser distance sensor

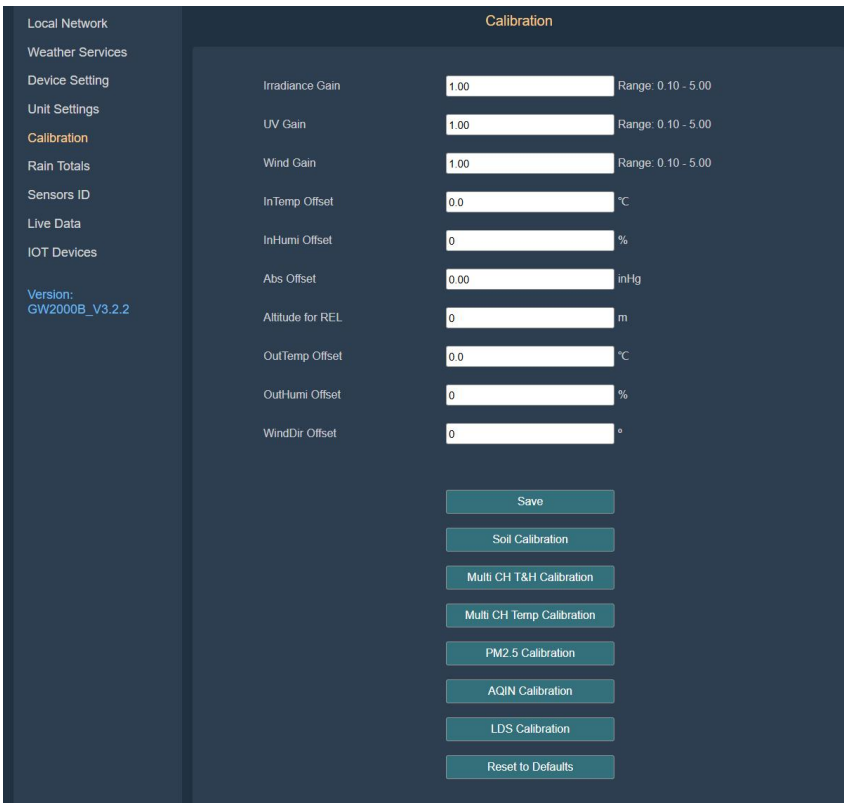


Figure 35

8.7 Rain Totals on Web UI

This page supports settings such as:
(1) Choose traditional or piezoelectric rain gauge data to be uploaded to the WU server, as only one rain gauge data can be accepted when you have both our haptic rain gauge and tipping bucket type rain gauge.
(2) Rainfall calibration
(3) Rain reset time for Daily Rain/Weekly Rain/Rainfall Season
(4) For Piezo Rain1~5 Gain calibration
Piezoelectric rain gauge working principle: raindrops fall on the sensor's surface so that the monitoring panel produces small mechanical vibration, the vibration of the mechanical stress, and the sensor produces a voltage difference corresponding to the amount of rainfall.
In practice, the measurement of precipitation by piezoelectric rain gauges is influenced by environmental factors such as wind, terrain, and debris. In the case of large rainfall intensity, rainfall intensity can be measured by the piezoelectric rain gauge, but the raindrops landing may have two impacts on the monitoring panel so that the measured rainfall value is larger; for minimal rainfall intensity, due to the vertical momentum is too small, so that the measured rainfall value is small. Therefore, it is necessary to calibrate the piezoelectric sensors for

different rainfall intensities depending on the environment in which they are located.

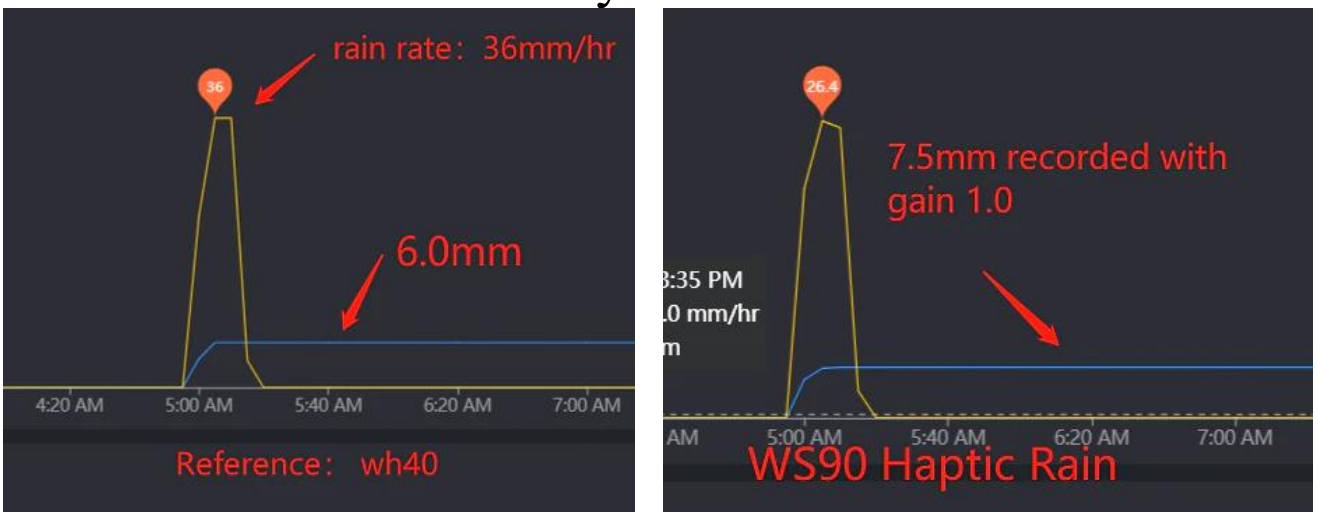


Figure 36

WS90 and WS85 are weather stations equipped with piezoelectric rain gauges. To make your rain data more accurate, you can calibrate the rain sensor accuracy by yourself:

1. A reference is needed to record the rainfall value, and it is also important to be able to record the rain rate. Our WH40 rain sensor can be used for this purpose.
2. You can set five rain gain parameters: Piezo Rain1: Rain5. We usually leave Rain1 as it is unless you can confirm it consistently produces the same result, and then you can adjust this.
3. Please ensure that you record rain data as follows: set rain4 gain to 6/7.5, which equals 0.8. For easier management, set rain2, rain3, and rain5 all to 0.8 for now.

Only when different rain rates are recorded, divide the ws90 rain by 0.8 to get 1.0 rain, and then recalculate (reference/ws90/0.8) to precisely adjust the corresponding rain gain setting.

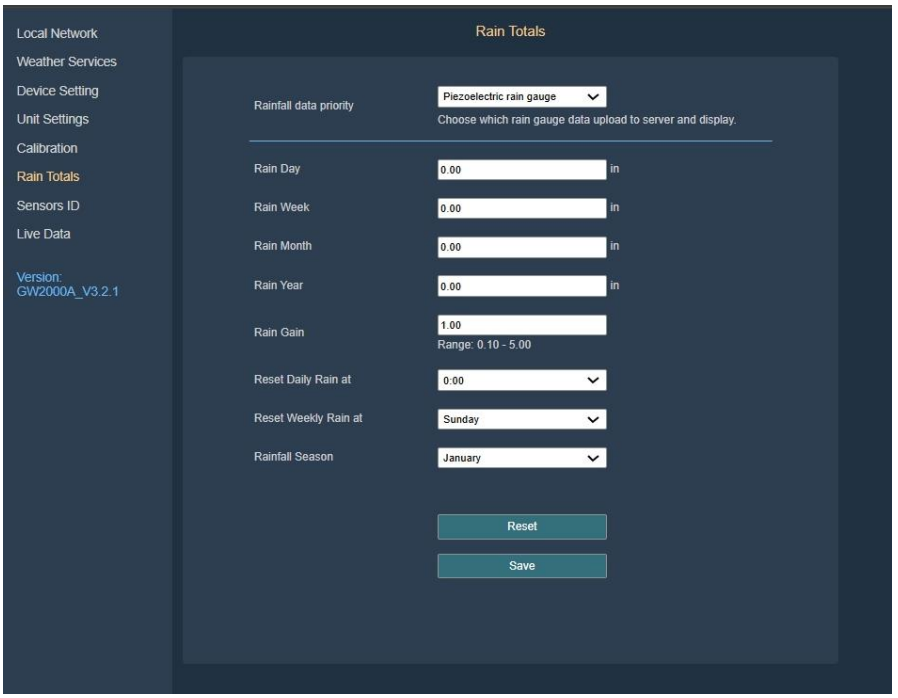


Figure 37

8.8 Sensor ID on Web UI

(1) Supports viewing and registering sensor ID.

(2) Viewing battery status and signal quality.

(3) By entering the "Edit" sub-page of a particular sensor, you may register the sensor by entering the sensor ID so that this sensor can be mandatory assigned. You can also choose to disable the sensor.

It is good practice to disable all sensor ID slots of sensors which you don’t have or don’t use with your console/gateway in order to avoid the reception of "ghost" sensors from other weather stations in your neighborhood.

(4) By entering the "Re-register," the gateway will learn the sensor again to ensure its presence. If a new sensor is discovered, it will be displayed.

Here with its sensor ID registered**:**

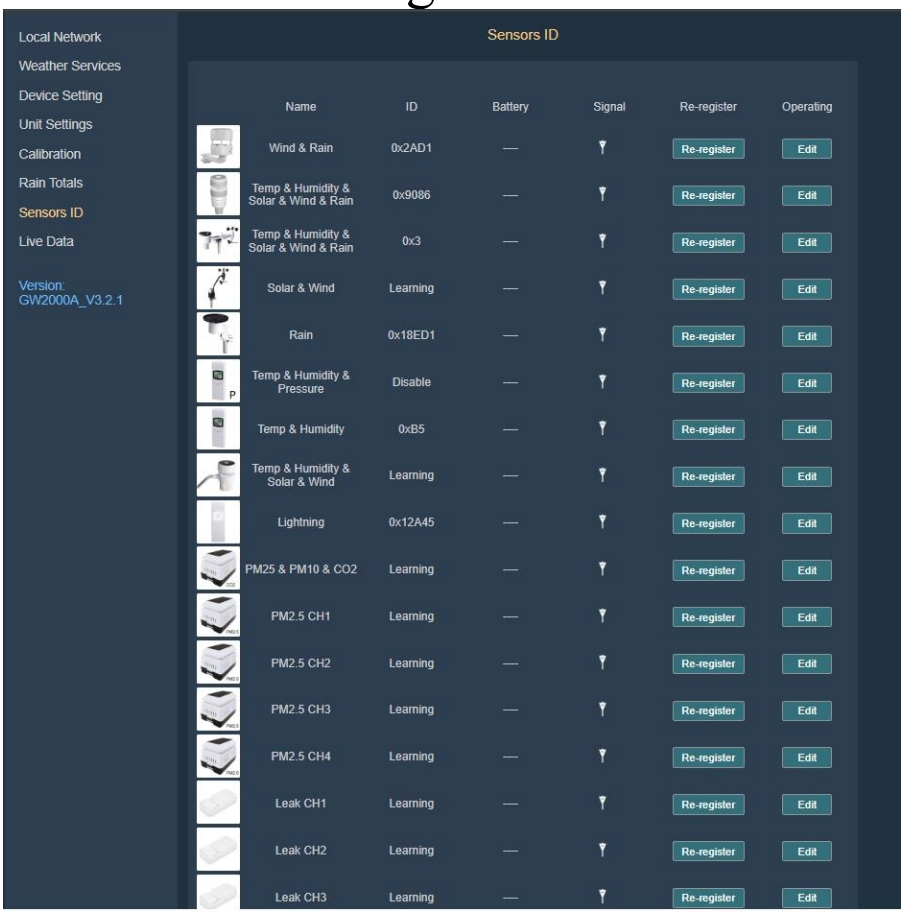


Figure 38

8.9 Live Data on Web UI

(1) Display connected sensor data.
(2) Show GW2000's battery voltage and solar charging power supply voltage.
(3) You can edit the sensor name by clicking the pencil icon. This name is only reflected on this device, it will not update your dashboard tile name at ecowitt.net.

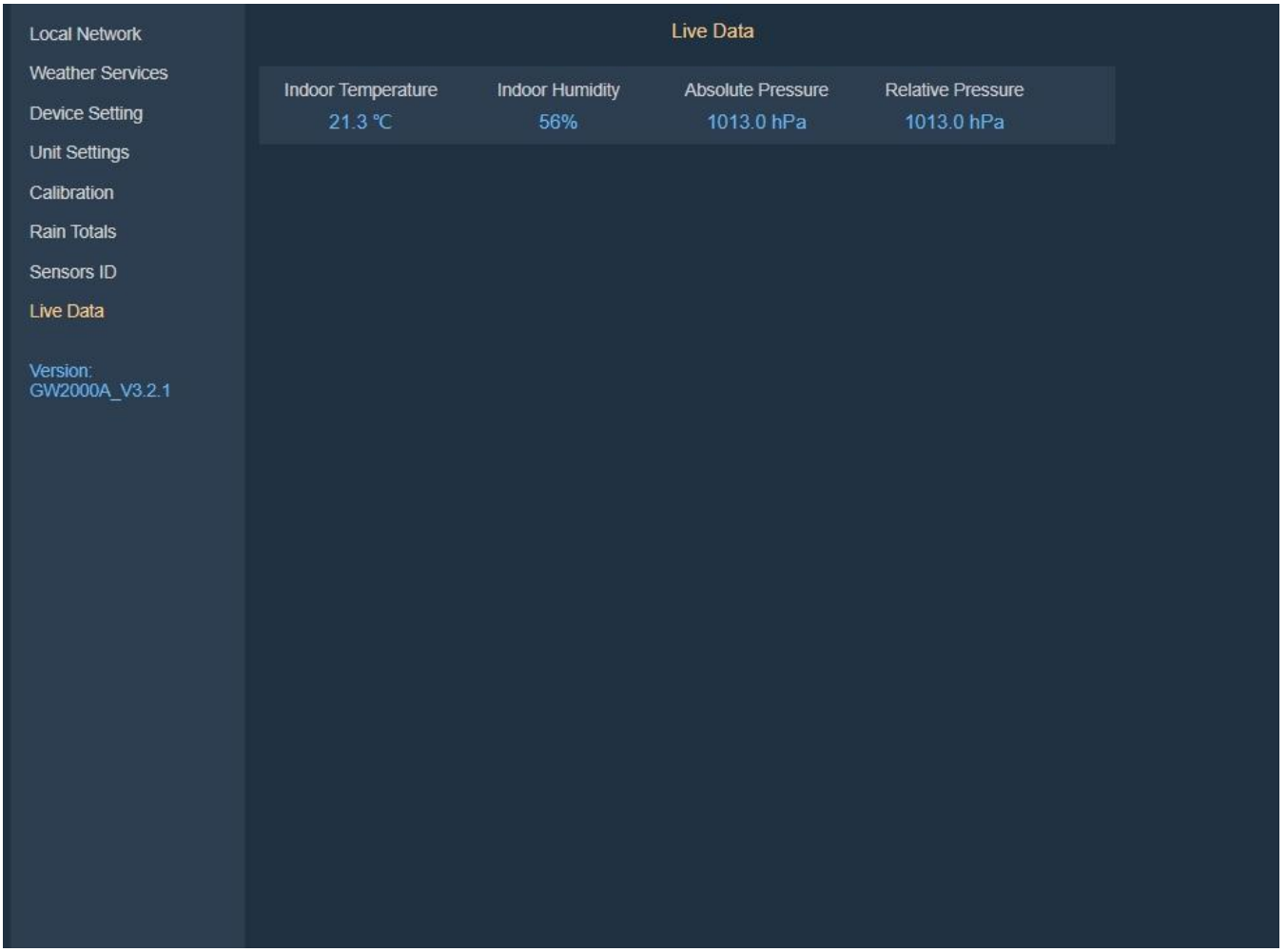


Figure 39

9 Historical Data Export and Clear

9.1 Export History Data

When the network configuration (refer to **section3.3 Ecowitt APP Network Provisioning**) is completed, you can log in to Ecowitt.net to export the data in CSV file format.

1. Choose the period of data.
2. Click "Export".
3. The file will be downloaded automatically.

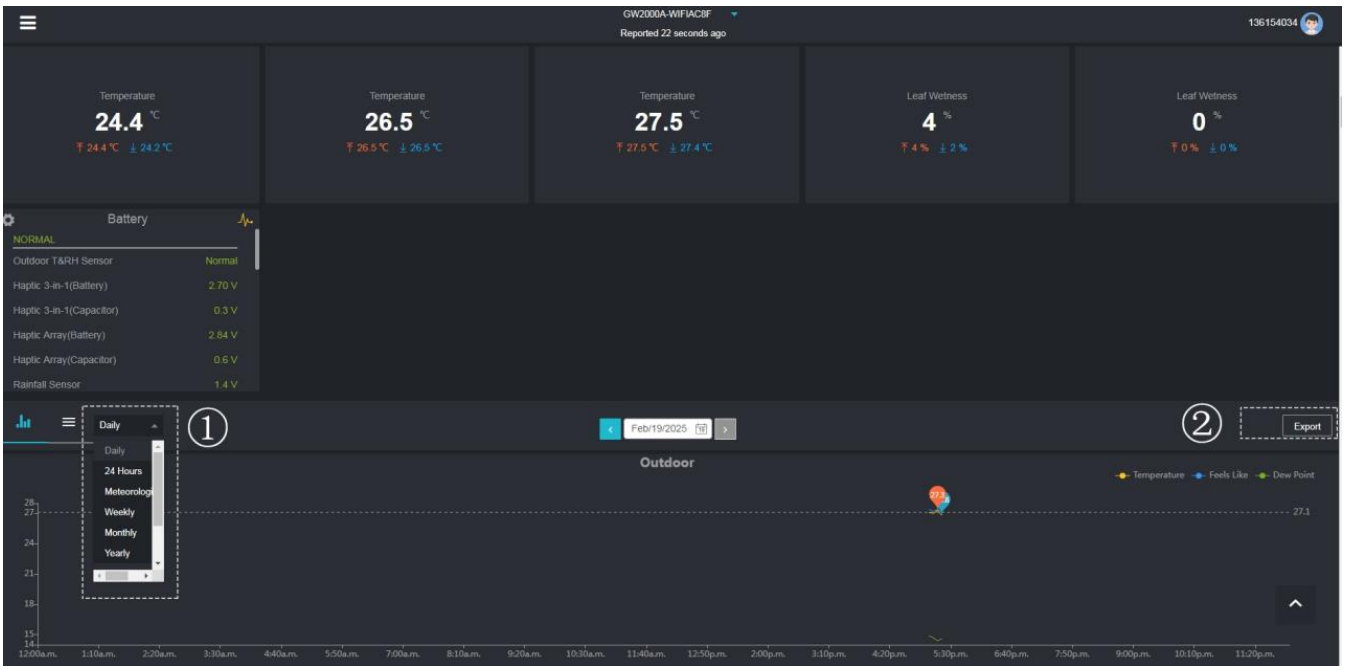


Figure 40 Export History Data

Note:
Data with a query period of days/24 hours is retained for 3 months.
Data with a weekly query period is retained for 1 year.
Data with a monthly query period is retained for 2 years.
Data with a yearly query period is retained for 4 years.

9.2 Clear History Data

Under "menu" - "devices" - "..." button to clear history data.

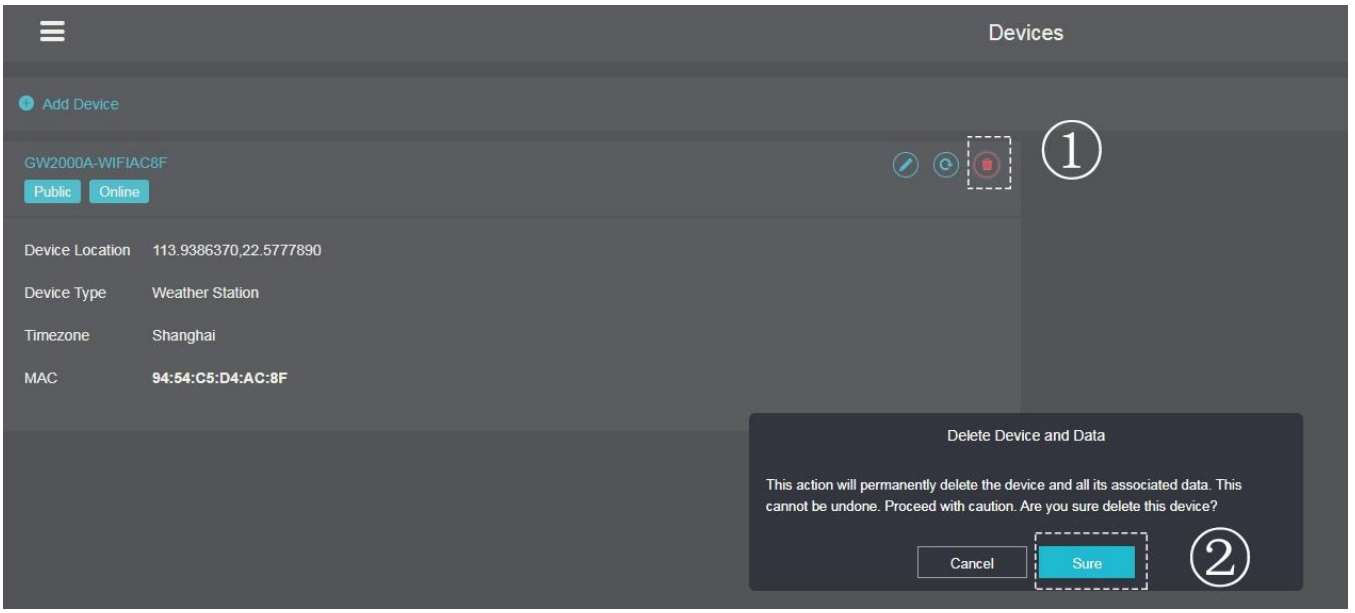


Figure 41 Clear History Data

10 Optional Weather Servers

10.1 Weather Servers Supported

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. Customized servers

10.2 Upload Weather Servers on Ecowitt app

(1) Ensure that the mobile phone and GW2000 are using the same Wi-Fi.
(2) Ecowitt App - "···" at the top right corner - "Others" - "DIY Upload Servers"

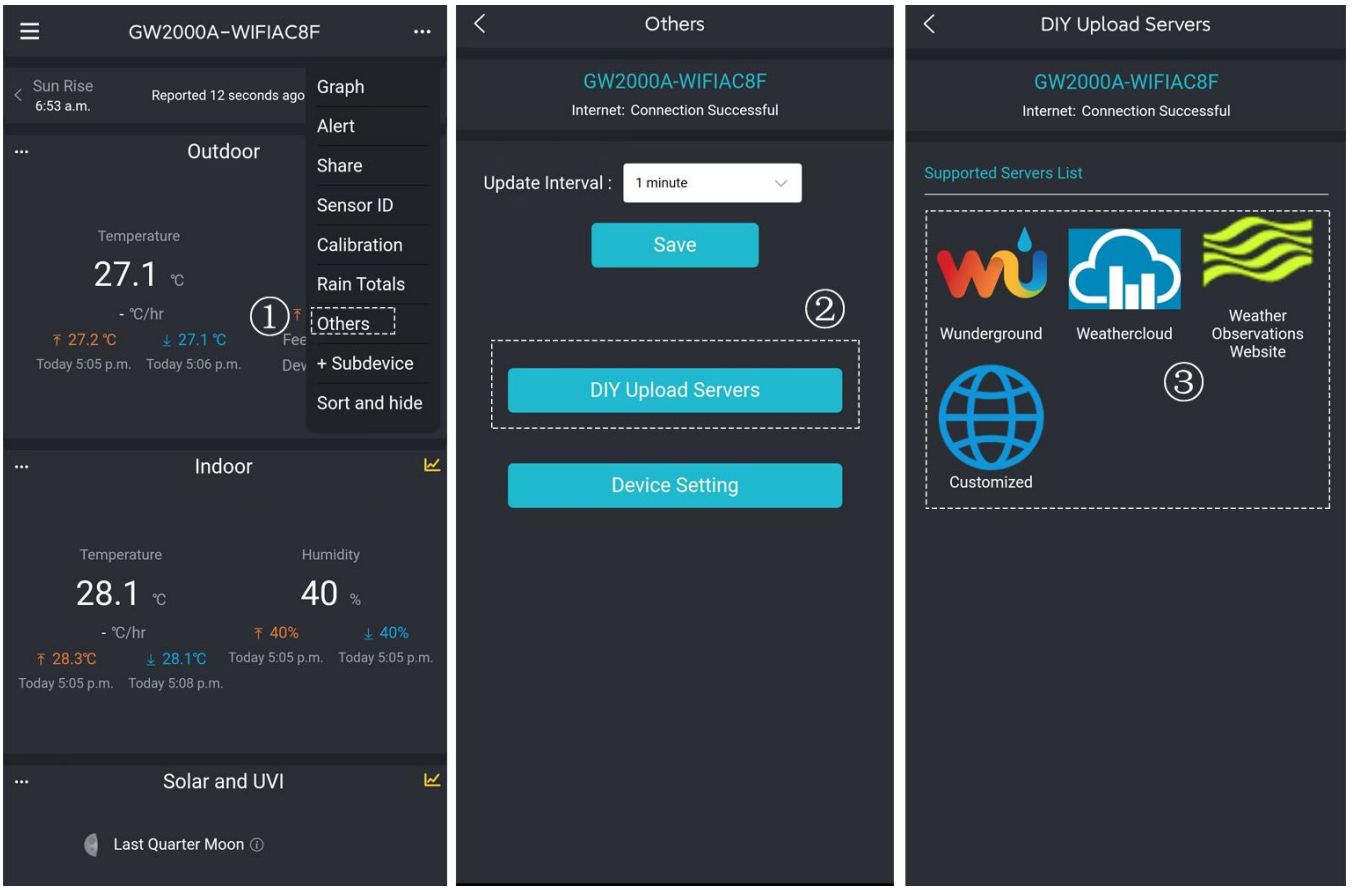


Figure 42 Upload Data to Server

10.3 Upload on Web UI

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

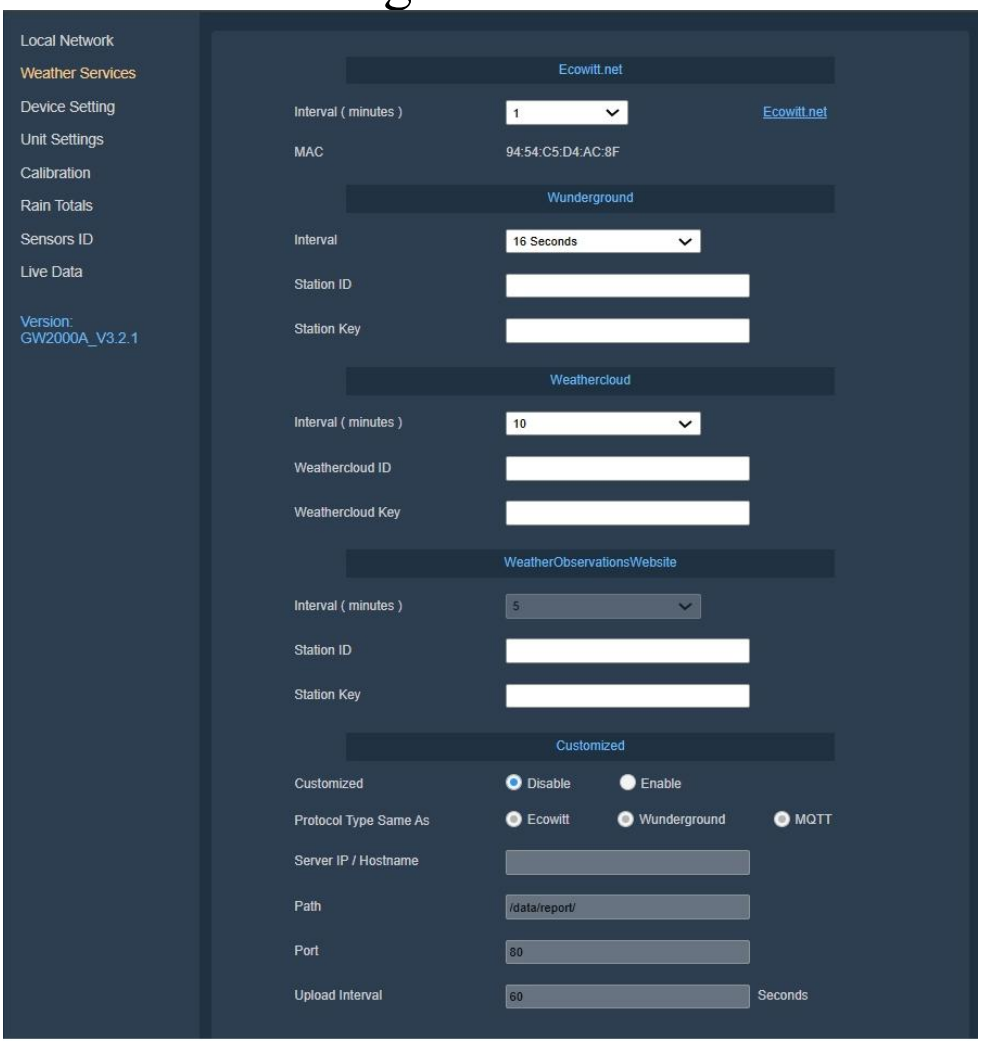


Figure 43

11 Features

- The gateway has built-in indoor temperature and humidity sensors and a barometric sensor to monitor indoor conditions in real-time.
- The gateway has a red light(wifi connection), a blue light(sensor link), and a big reset button for easy use and management. Its base has installation holes that allow it to be placed on a tabletop or mounted on a wall, offering flexible installation options.
- The gateway supports RF signal reception from Ecowitt transmitters and RF communication with Ecowitt IoT products, enabling a wide range of functionality. (Refer to the section on optional sensors.)
- The gateway supports both Ethernet and 802.11 b/g/n 2.4GHz Wi-Fi for data transmission, allowing data uploads to local WebUI and cloud services(like Ecowitt Weather, Weather Underground, WOW, Weather Cloud, and custom servers.).
- Provides minute-level data updates, device displays, statistical charts, and the Weather Map for real-time global weather data access. Also offers free online data troubleshooting and an open API to support user-driven secondary development.

12 Specifications

Note: Out of range values will be displayed using "---"

Model	GW2000
Name	Wired and Wireless Wi-Fi Gateway
Dimensions	φ110*35.5(mm)
T&H Probe Dimensions	10.5*12*5.5mm
T&H Cable length	0.9m
Weight	91(g)
Material of Plastic Casing	ABS
Key	Reset
Indicator light	"RF", "Network"
Temperature Metering Range	-9.9°C to 60°C (14°F to 140°F)
Temperature Metering Accuracy	±1°C(±1.8°F)
Temperature Metering Resolution	0.1°C, or 0.1°F
Humidity Metering Range	1%RH to 99%RH
Humidity Metering Accuracy	±5%RH
Humidity Metering	1%RH

Resolution	
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)
Reading Update Interval	About 1 minute
RF Connection Frequency	920/915/868/433MHz (depending on local regulations)
RF Wireless Range	Over 100 meters (in open areas)
WLAN	802.11 b/g/n 2.4 GHz (802.11n, Max 150 Mbps)
WLAN Range	Over 30 meters (in open areas)
Console Operating Temperature	-10°C to 60°C (14°F to 140°F)
Power Supply	5V 1A USB to DC

Table 4 GW2000 Specifications

13 Troubleshooting Guide

Look through the following an issue or problem you are experiencing at the serial number and read possible solutions after that.

① Relative pressure does not agree with the official reporting station

• Relative pressure refers to sea-level equivalent temperature and should generally agree closely with the official station. If there is a disagreement, make sure you are not looking at absolute pressure, in particular, if your station is not near sea level. Also, check at different times due to occasional delays in updates to the official station.

• Redo the pressure calibration procedure.

The barometer is only accurate to + 0.09 inHg (3hPa) within the following relative pressure range: 8.86 to 32.48 inHg (300-1,100 hPa), which corresponds to an altitude of 29,527 ft. (9,000m) down to 2,500 ft. (750m) below sea level. At higher altitudes, you should expect a possible lesser accuracy and non-linearity effects in the error (the calibration offset only allows for a partially linear correction).

② Time is incorrect

• Make sure your time zone and DST(daylight savings time) setting is correct.

③ Data not reporting to Wunderground.com

• Confirm your password is correct. It is the password you registered on Wunderground.com. Your Wunderground.com password cannot begin with a non-alphanumeric character (a limitation of Wundeground.com, not the station). Example,$oewkrf is not a valid password, but oewkrf$ is valid.

• Confirm your station ID is correct. The station ID is all capital letters, and the most common issue is substituting an O for a 0 (or vice versa). Example,KAZPHOEN11, not KAZPH0EN11.

• The number "1" can be easily confused with the lower case of letter "L".

• Make sure the date and time are correct on the gateway. If incorrect, you data may be considered old data, not real time data, and will be rejected.

• Make sure your time zone is set properly. If incorrect, you may be reporting old data, not real time data.

• Check your router firewall settings. The gateway sends data via Port 80.

④ No Wi-Fi connection, or gateway configuration failed

• Check for the Wi-Fi light on the gateway. If wireless connectivity is operational, the Wi-Fi light will be steady. Make sure you configured the correct SSID and password. Repeat the procedure as necessary to verify.

• The gateway does not support so-called "captive Wi-Fi" networks. These are typically "guest" type networks where users have to agree to terms and conditions before being connected.

• Make sure your Wi-Fi supports 2.4 GHz signals (801 type B or G, or N) because Wi-Fi that uses the 5 GHz spectrum is not supported. For router with dual band, please disable the 5GHz band.

• Turn off your mobile data/ cellular data.

• Ensure the DHCP mode is open Try alternative methods.

• Method 1:

Power off the gateway.

Power on the gateway.

• Open the Wi-Fi network on your phone or computer, and connect to the hotspot of GW2000 -WIFIXXXX.

• Open your browser, type 192.168.4.1 in the browser address search bar and enter - login - Local Network - enter your Router SSID and Password - Live Data.

• Method 2:

• Reset your router or reset the gateway to factory mode and then try the configuration again.
• Method 3:
• Try to set your router password to none and then do the configuration again. If successfully, you may set your router password back and configure the gateway again.
• Method 4:
Try the configuration using a different mobile device.

⑤ Would I check the block of "Automatic Firmware Upgrade?What are the consequences?"

• If an upgrade is available in the future, you can check the About page for firmware updates. If you set the "automatic upgrade" option, the firmware will be updated once an update is available.

⑥ Can I add an additional gateway for a different room that takes data from the same sensor array?

• Yes, you can add an additional gateway, one transmitter can be connected to two or more gateway at the same time.

⑦ The outdoor data displayed on the gateway (temperature/humidity) is showing as "--°" ,while other data is displaying normally.an I add an

additional gateway for a different room that takes data from the same sensor array?

• It's possible that the temperature and humidity sensor module is malfunctioning. Please confirm the issue by following these steps to operate the outdoor sensor array:

• Unscrew the screws at the bottom of the radiation shield and open it, then remove the module, check if there are any other data. If not, press the reset button (the transmitter manual describes the location of the reset button). If other data are normal,plug in the module again. If it still displays --°, it means the module is broken.

• Please take a photo of the sensor module and send it to us. We will send you a replacement based on the original module. Please replace it upon receipt.

⑧ Outdoor sensor array does not communicate to the gateway. – i.e you don't see the weather data of either one or all outdoor sensors.

• Power-cycle the gateway and see if there are any changes – leave one minute time in between.

• If reset the gateway doesn't help, we have to reset the outdoor array

• A: software reset:

inserting the end of an opened paper-clip into the reset hole (see manual for WS68 and WS69 array) or pressing the reset button (WS80, WS85 and WS90 array) for about five seconds will restart the array firmware and the LED will start blinking again (WS68/69 every 16 seconds, WS80 every 5 seconds, WS85/90 every 9 seconds).

• If A doesn't provide the desired result, we have to perform a hardware rest.

• B: hardware reset

- take out the backup batteries

- cover the solar panel of the array tightly with black tape or take it into a dark room and wait until the LED stops burning or blinking. The internal battery has to be discharged completely. This may take up to 48 hours.

- once the LED has stopped blinking, re-insert the batteries.

- the array should power-up and start blinking again every 5-16 seconds depending on the array model.

⑨ Rain gauge reports rain when it is not raining

• An unstable mounting solution (sway and vibrations in the mounting pole) may result in the tipping bucket incorrectly incrementing rainfall. Make sure you have a stable, level mounting solution.

⑩ Wireless remote (thermo-hygrometer) not reporting in to gateway.

- There are dashes on the gateway. The maximum line of sight communication range is about 300’. Move the sensor assembly closer to the gateway.
- Re-synchronize the remote sensor(s). Install a fresh set of batteries in the remote sensor(s).
- Make sure the remote sensors are not transmitting through solid metal (acts as an RF shield), or earth barrier (down a hill).
- Radio Frequency (RF) Sensors cannot transmit through metal barriers (example, aluminum siding) or multiple, thick walls.
- Move the gateway around electrical noise generating devices, such as computers, TVs and other wireless transmitters or receivers.

⑪ Can't view the data of related sensors

- Update firmware: APP upgrade, gateway upgrade, WiFi upgrade
- Re-power up
- Re-distribute the network
- Reset factory settings

⑫ Damage to the hardware:

• No display/no power on: replace USB power cable, replace adapter, or replace battery (warranty within 2 years of warranty)

• LCD font is missing/light and dark scratch. (warranty within 2 years of warranty)

• Abnormal key function. (warranty within 2 years of warranty)

14 Optional Sensors

The product supports receiving data from various sensors, which can be used with the Ecowitt server for enhanced data services. The RF reception function will always be turned on to receive data from all registered sensors anytime.

14.1 Sensor Data Reception Priority

Please note that data processing is prioritized when there is more than one sensor array or a rainfall sensor for outdoor temperature, wind, rain, and solar data where applicable registered in the gateway (sensor hierarchy).
Sensor Array
Priority:WS85>WS90>WS80>WS68>WS69.
Piezo rainfall priority: WS85>WS90

Traditional rainfall Priority: WH40>WS69.

14.2 Optional Sensor

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).

Notes:
(1) The max Quantity in the following table indicates the maximum number of the same sensor model or type that can be connected to the gateway.

(2) Theoretically all the different sensor arrays (WS68, 69, 80, 85, 90) could be connected to one gateway at the same time, but due to the sensor hierarchy (see above) this would only make sense in a few special cases (e.g. WS85 + WS68 (get solar data from WS68). WS85 or WS90 + WS69 (get traditional rain data from the WS69).

Sensor Model	Maximum number per console	Picture	Functions
WS90	1		Outdoor temperature & humidity, light, UV, wind speed/direction, rainfall
WS85	1		Wind speed/direction, rainfall
WS80	1		Outdoor temperature & humidity, light, UV, wind speed/direction
WS69	1		Outdoor temperature & humidity, light, UV, wind speed/direction, rainfall
WS68	1		Light, UV, wind speed/ direction
WH40	1		Rainfall

WN32P	1		Indoor temperature, humidity, and pressure
WN32/WN32S	1		Outdoor temperature and humidity
WN31/WN31S	8		Temperature and humidity
WN30			Temperature
WN36			Pool temperature
WN34 L/S/D	8		Temperature
WN35	8		Leaf wetness
WH41	4		PM2.5(Particulate Matter)
WH43			PM2.5(Particulate Matter)

WH45/WH46	1		CO_2(Carbon Dioxide), PM(Particulate Matter), temperature and humidity
WH46D			CO_2(Carbon Dioxide), PM(Particulate Matter), temperature and humidity
WH51	16		Soil moisture
WH51L			Soil moisture
WH55	4		Water leak detection
WH57	1		Lightning detection
LDS01	4		Laser Distance Sensor

Table 5 Optional Sensors

Device Model	Maximum number per console	Picture	Functions
WFC01	16		Smart water timer
WFC02			Smart ball valve timer
AC1100			Smart plug

Table 6 IoT Devices

15 Warranty & Caution

15.1 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.

15.2 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.

Manufacture: Shenzhen Fine Offset Electronics Co., Ltd.
Address: 4/F, Block C, JiuJiu Industrial City, Shajing To wn, Baoan District, Shenzhen City, China

16 Contact Us

16.1 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.

16.2 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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