ecowitt®

Wi-Fi & Ethernet Weather Station Gateway

built-in Temperature, Humidity and Barometric Sensors with SD Card Port, and Enhanced Omni-directional Antenna

Model: GW3010

https://s.ecowitt.com/U9FCGF

Table of Contents

1 Getting Started

1.1 Package List

One Ethernet / Wi-Fi Gateway GW3000

One Enhanced Omni-directional Antenna

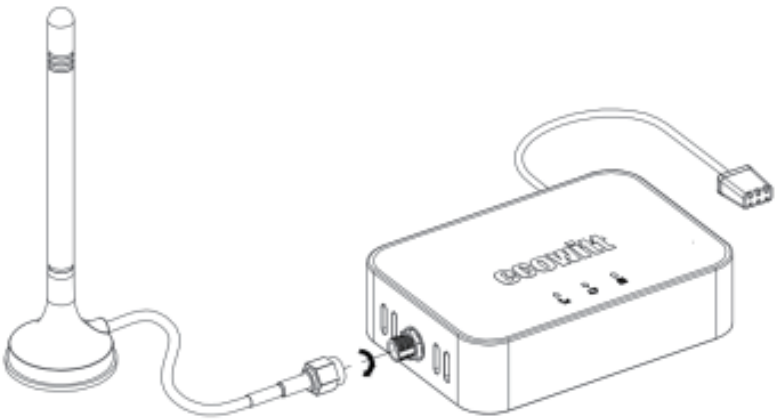
One USB to Type-C Cord

One User Manual

One Quick Start Guide

Note: The gateway is designed with a Type-C port for power supply, using the USB-A cable to connect to a 5V 1A power adapter (not included).

1.2 Initial Installation



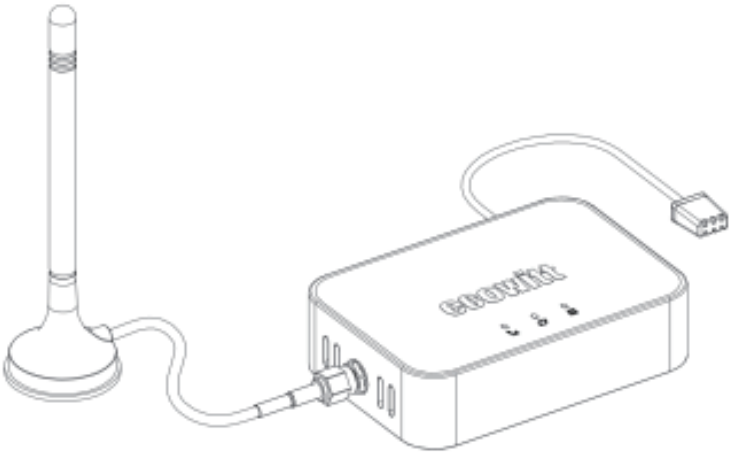


Figure 1 Install Antenna(Use the 868/915Mhz version as illustration)

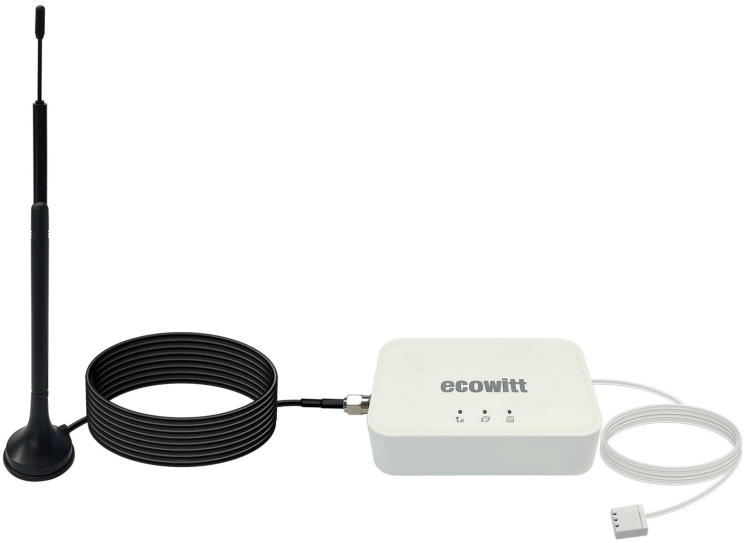


Figure 2 Finish(433 Mhz)

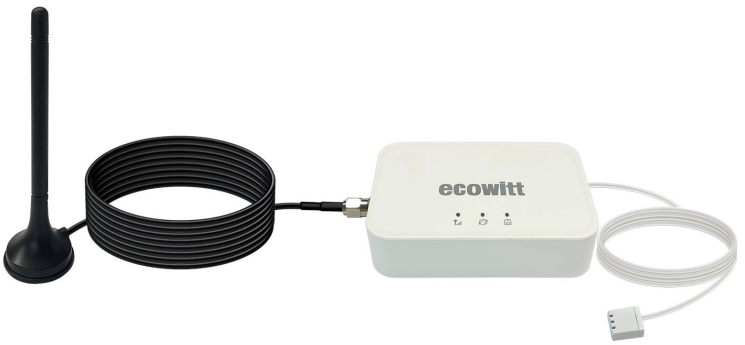


Figure 3 Finish(868/915Mhz)

1.3 How to Place the Antenna for the Best Signal

1.3.1 Avoid bundling the antenna cables

Keep the coaxial cable straight and avoid tying, coiling, or bundling it, as this can reduce signal sensitivity. Spread out any extra cable length loosely and avoid placing it near metal objects or other sources of interference.

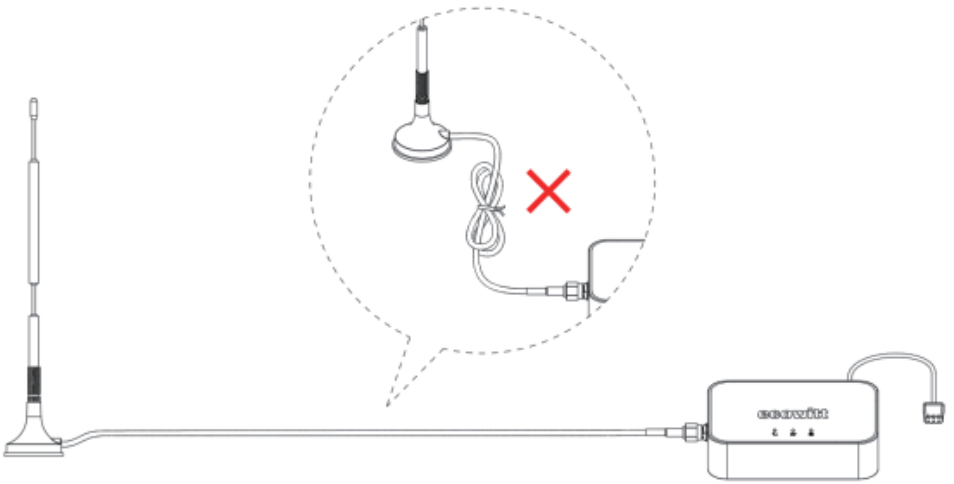


Figure 4

1.3.2 Installation Location

Keep the antenna away from high-radiation electronic devices such as microwave ovens, routers, or other high-power appliances. For indoor installation, place the antenna where it can directly "see" the transmitter.

1.3.3 Antenna Orientation and Radiation Principle

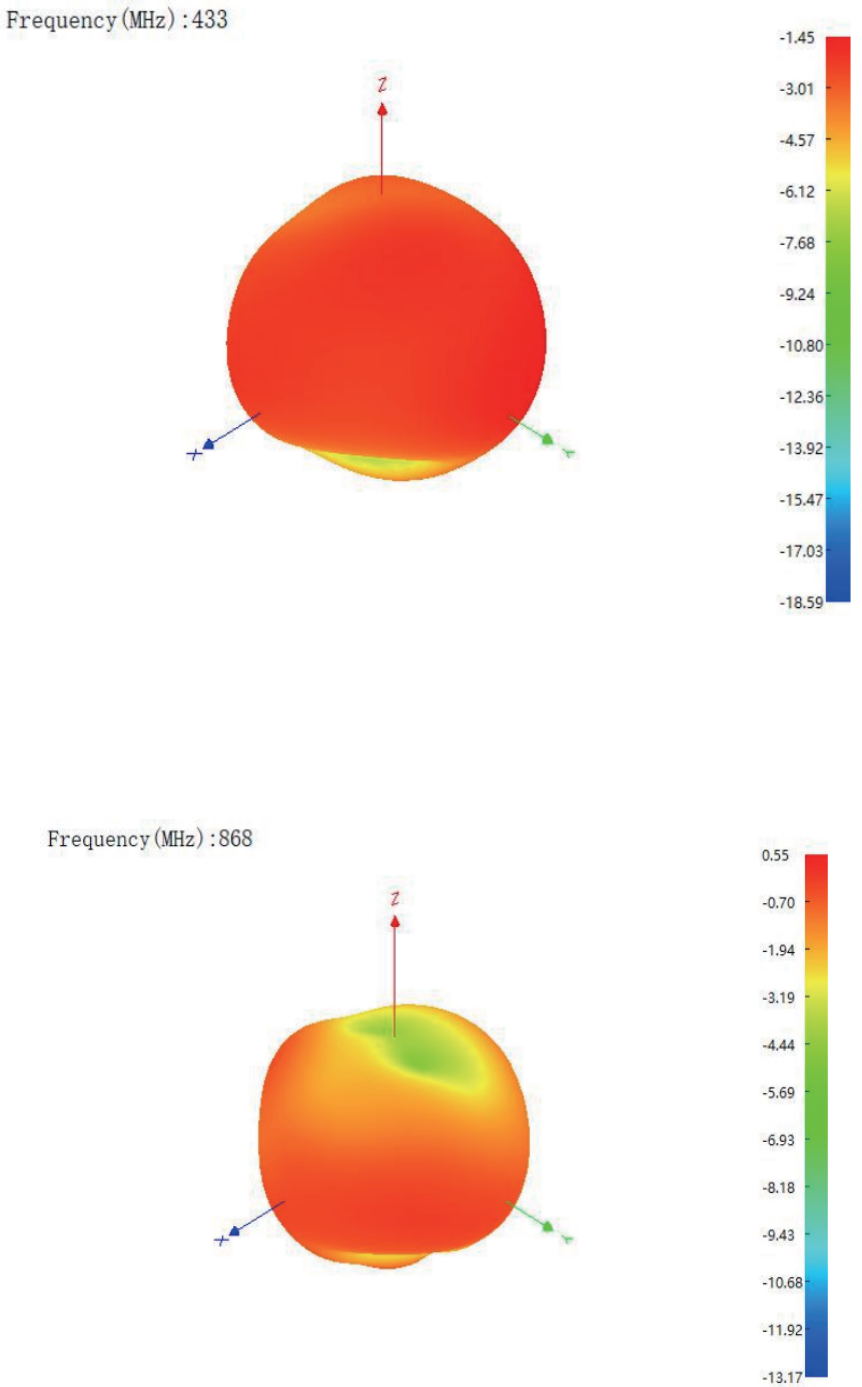


Figure 5 3D Radiation Pattern Diagram

The antenna has a radiation pattern that is strongest in the horizontal directions and roughly equal in all four horizontal directions, while the signal is weakest above and below.

Note: It is recommended that users keep the **transmitter and receiver antennas on the same plane** to achieve optimal signal reception.

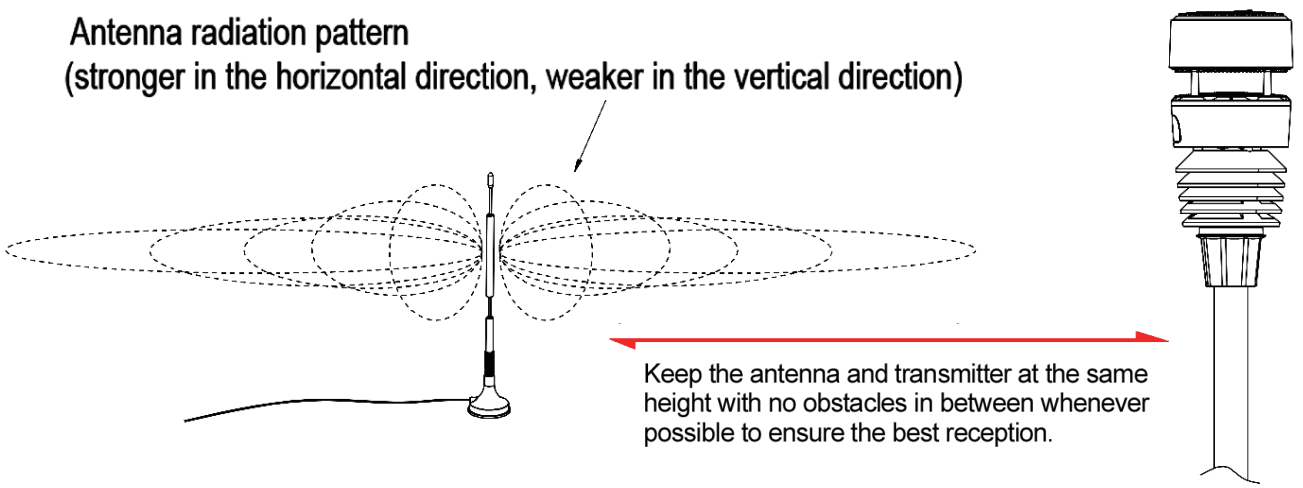


Figure 6

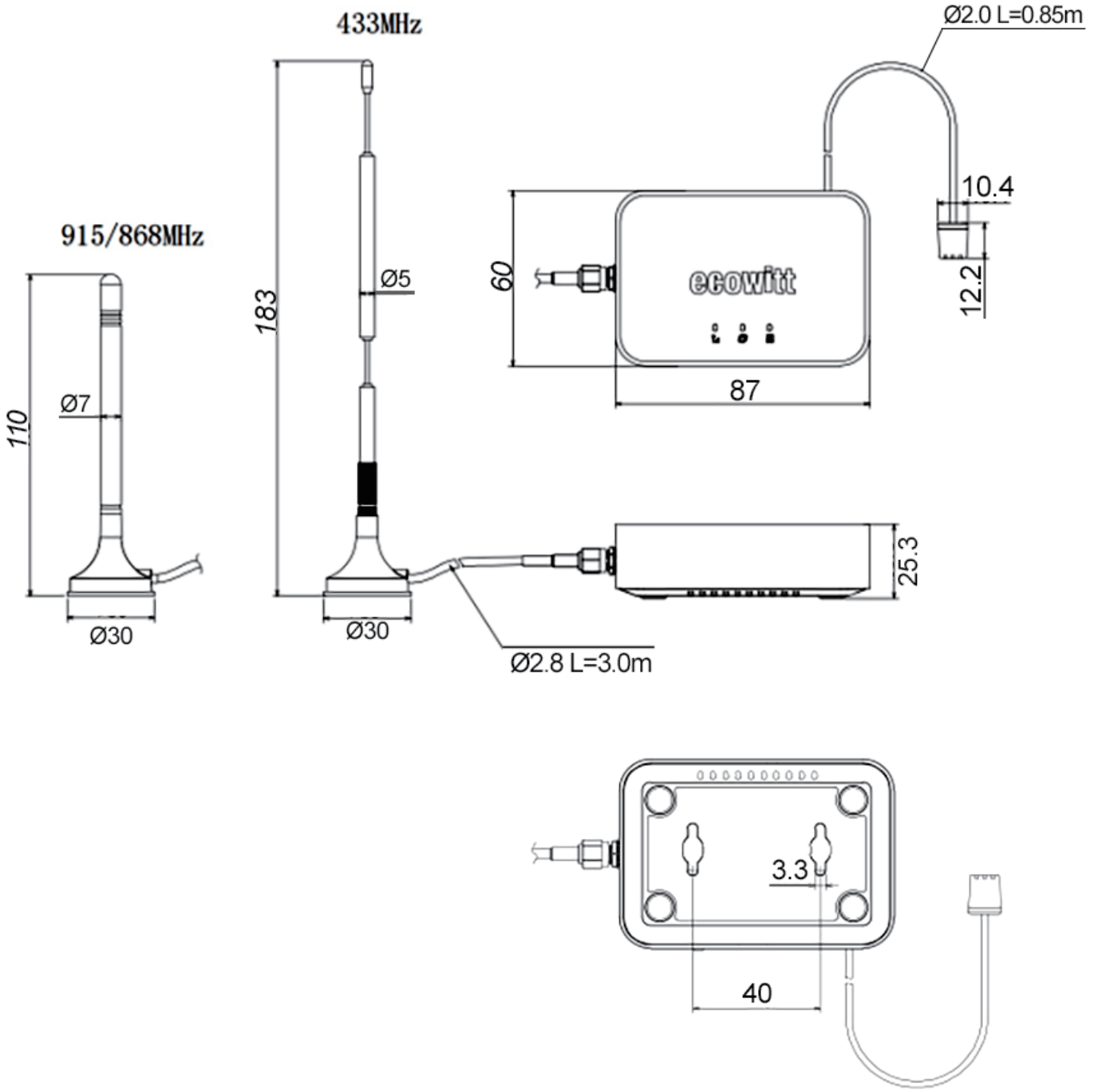
Rotate and adjust the antenna in different directions, and check the RSSI value in the app. A higher RSSI value means a stronger and more stable signal.

- If the RSSI is lower than -100 dBm, the signal will not be reliable.
- For good reception, the RSSI should be higher than -80 dBm.

1.3.4 Testing & Confirmation

After installation, test signal reception to ensure stable coverage. Fine-tune the antenna's position and height as needed to achieve stable reception throughout the area.

Multiple Views and Size (Unit:mm)



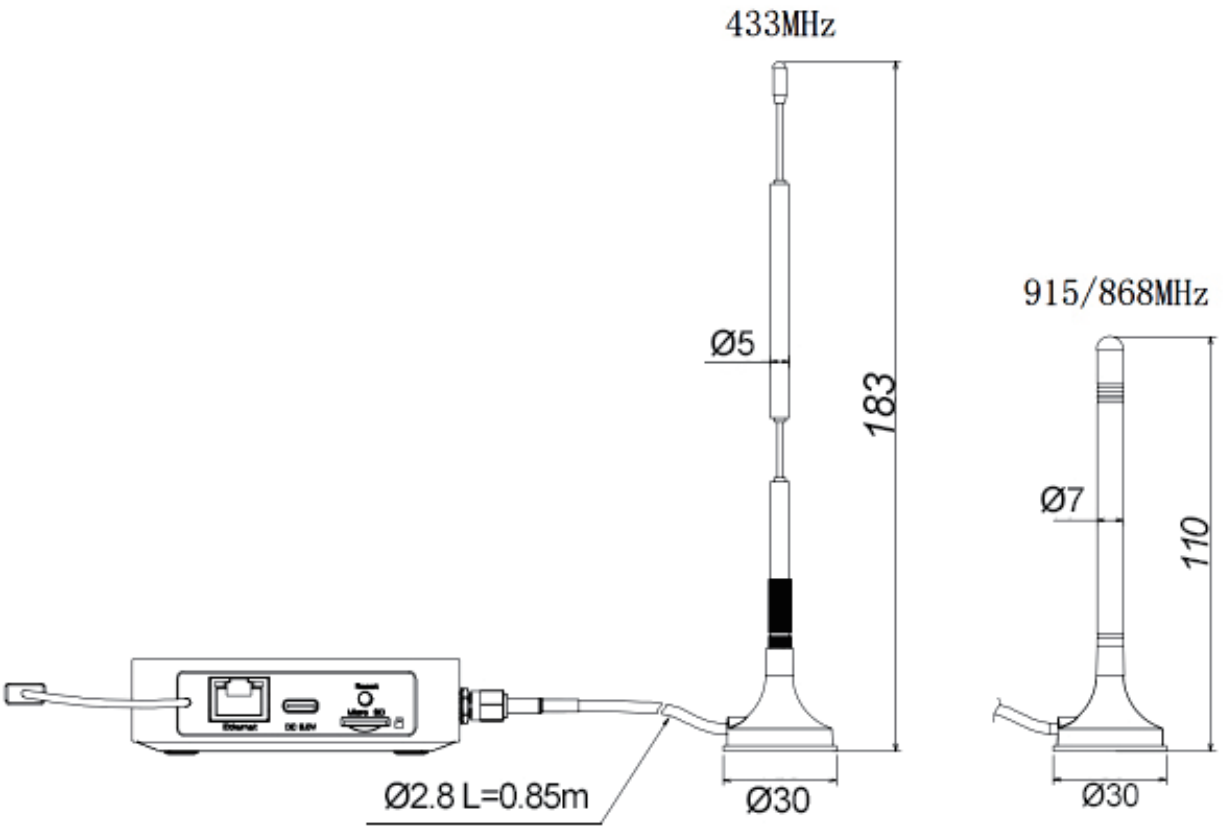
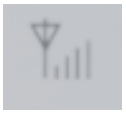


Figure 7 Views and sizes

1.4 LED Indicators Function

Figure 8 LED Indicators

After powered on, the RF light is on for 3 seconds (RF long emission lasts for 3 seconds) and then goes out, the internet server light and the SD card light are lit in sequence and then go out again, then the gateway enters into normal operation.

Light	Indicators
 RF	On: Between sensor signal reception Off: No sensor data is received Flashing: Receiving signal from sensor(s)
 Server	Always On: Upload the data to the server Always Off: No network connection Fast Flash: Provisioning is on-going Slow Flash: Provisioning is completed, but no upload of the data to the Ecowitt server Blinking light: Keeps on flashing every 5 seconds when connected to the local network router

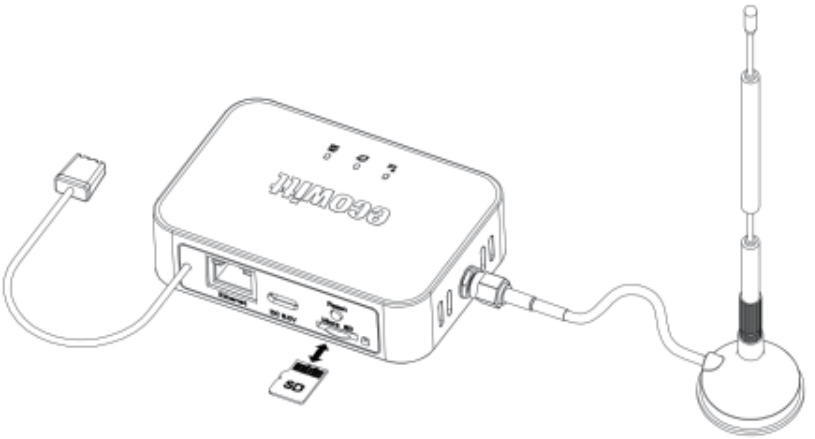
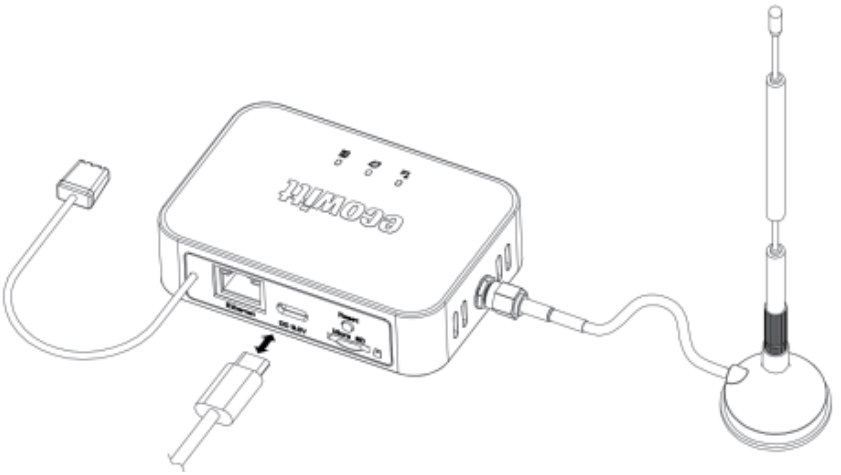
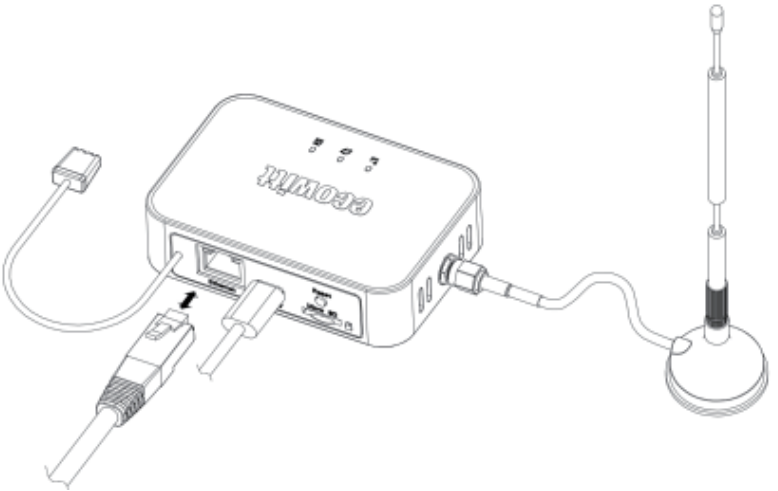
SD Card	Always On: SD Card normal Always Off: No SD Card Flashing: error during a read or write operation

Table 1

Note: Slow flash means one flash per second, and fast flash means multiple flashes per second.

1.5 Port and Button

Figure 9 Back View

Item	description
Insert SD card (Optional)	
DC 5.0V Power Type-C	
Ethernet (Optional)	 Alternative connectivity via Ethernet

Reset (Optional)	1.Pressing the reset button for about 5 seconds will activate the WLAN/WiFi Access Point / hotspot. 2.Hold the Reset button pressed for about 10 seconds will reset the gateway to the factory default state. All lights will flash 3 times about twice a second and then the GW3010 will restart. History data like maximum daily wind speed or rain event, Wi-Fi settings, calibration settings, rain totals and sensor labeling, etc will be lost and need to be set again. Therefore, before doing a reset, we recommend to note down your current settings. **Note:** Data archived on the SD card will not affected by a factory reset.

Table 2

1.6 Mounting Hole (Unit:mm)

1. The gateway can be placed flat in an indoor place where it can receive the sensor RF signals, and it should not be placed in a place with signal insulation or electromagnetic field interference (e.g. near a computer).
2. The gateway has two holes for wall mounting on its bottom. If you mind the dust entering ports, you can put its port down on a wall.

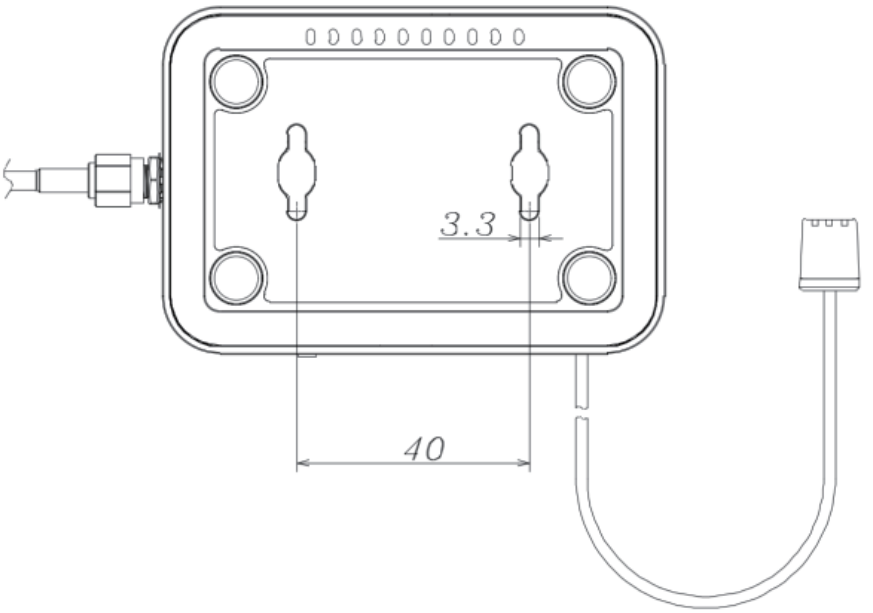


Figure 10

2 Internet and Local System Introduction

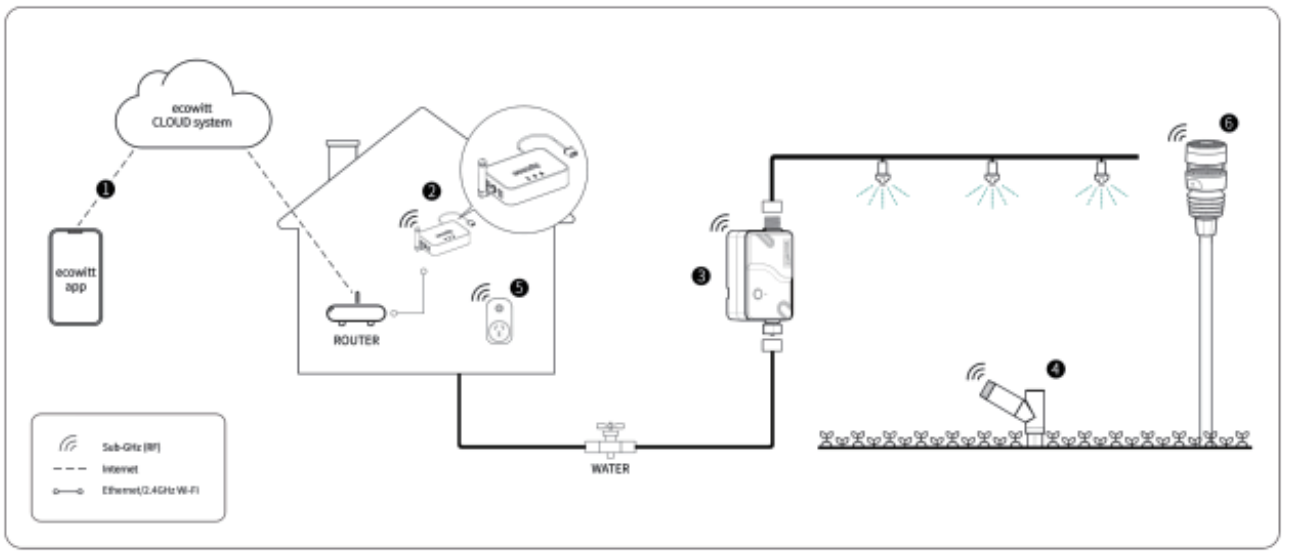


Figure 11 How the Ecowitt ecosystem works

Thank you for purchasing the GW3010, a Weather Station Gateway which comes with both a WLAN("WiFi")/LAN interface and built-in indoor temperature, humidity, and barometric sensors. It can also handle all other Ecowitt sensors that have been developed so far. By upgrading firmware, sensors developed in the future can also be hosted, allowing the gateway to build an extremely flexible local sensor network, your personal Ecowitt ecosystem. It can also use the free Ecowitt Weather Cloud internet service to display your current data and your data history for your own use and to share your data publicly at your own discretion.

The Ecowitt GW3010 Gateway with Enhanced Omni-directional Antenna features a magnetic base and an optimized antenna structure, enabling stable omni-directional signal reception and significantly extending the sensor reception range.
Using typical sensors as an example, in open areas without obstructions, the GW3010 can receive data from WH51 soil sensors at distances of up to 220 meters and from WS90 weather sensors at distances of up to 350 meters.

Local gateway configuration

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 WS View Plus app. You may refer to the WSView Plus APP instruction for more details.

This manual contains valuable information beyond just setting up your product which can become very useful also in later operation.
To ensure the best product performance, we would like you to please read this manual thoroughly and keep it for future reference.

Note on Frequency Versions

This product is available in different RF frequency versions depending on regional regulations:

433 MHz: A separate version, mainly for general worldwide use.

868/915 MHz: One common version, marketed as 868 MHz in Europe and 915 MHz in North America. Both refer to the same hardware version.

Please make sure to select the correct version for your region. The **433 MHz version** is not interchangeable with the **868/915 MHz version.**

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, we refer to the GW3010 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 frequencies. To avoid interference, ISM/SRD bands are kept separate from 4G frequencies by national regulations. Typical ISM/SRD frequencies are 915MHz (Americas), 868MHz (Europe), 433MHz (worldwide), and 920MHz (Japan, Korea).

3 Ecowitt Network Provisioning

3.1 Hardware Preparation

Prepare a power adapter with a USB-A port (not included) in advance. Use the USB cable coming with the the GW3010 to power it up (insert the USB-C plug into its USB Type-C port).

Prepare a network cable(not included) if you need provisioning using the QR code method (No router password).

3.2 Install the Ecowitt APP

Scan the QR code on the bottom of GW3010 to down load the app.

Make sure you have the location and Wi-Fi service of your smartphone or tablet enabled for the Ecowitt APP

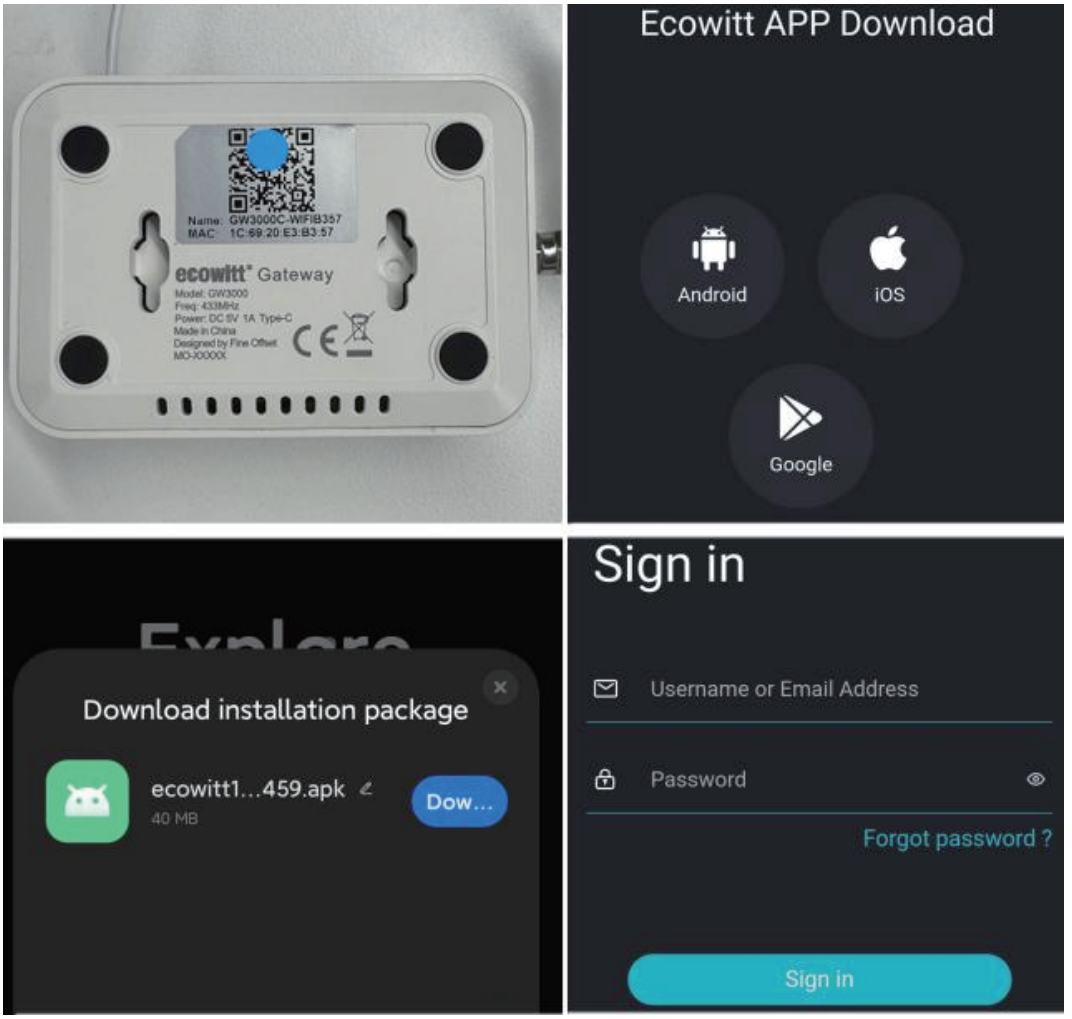


Figure 12 Download and Sign in Ecowitt App

3.3 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. If after completion you want or need to change your router, and do not maintain the same SSID of your wireless network and the same router password, you will have to repeat this process again.

3.4 Scan QR Code

This method can be used when using the LAN port to connect to your local network (router).

1. Open Ecowitt App, click "My Devices", and click "Add New Devices", choose the model of GW3010 from the product listing.

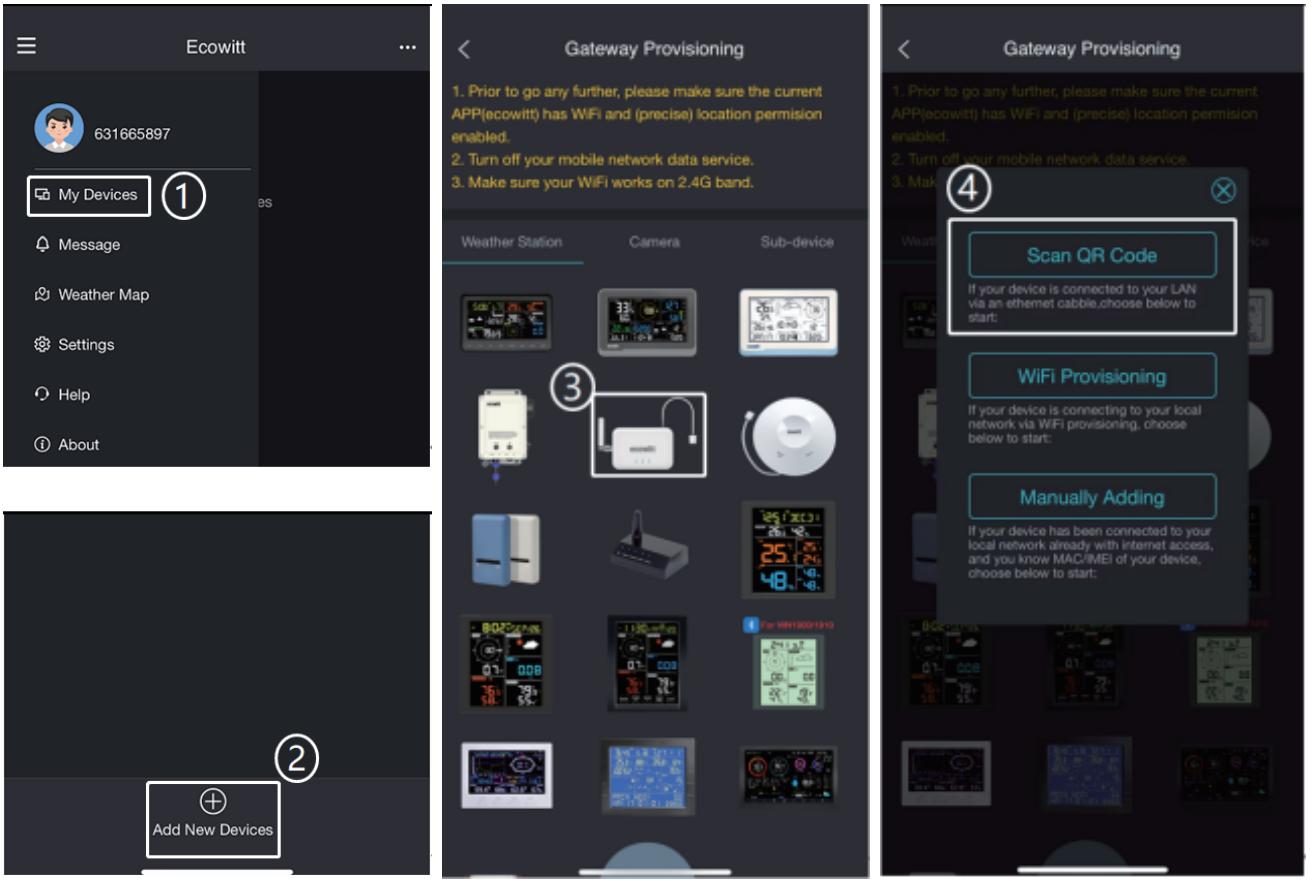


Figure 13

2. Tap on the button marked with "Scan QR Code" Connect the GW3010 beforehand to your router through a network cable (not included).

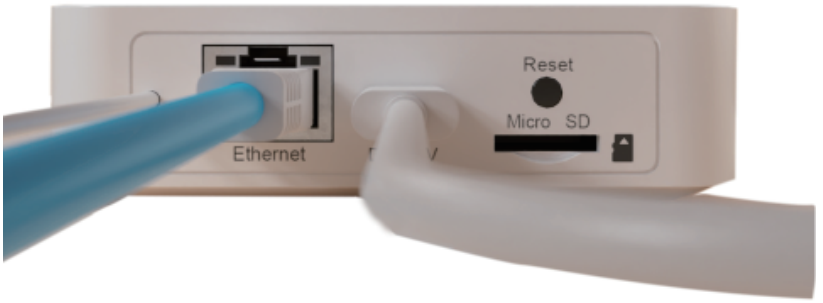


Figure 14

3. Scan the QR code on the device - this will transfer the GW3010 device data to the Ecowitt app. Don't forget to save.

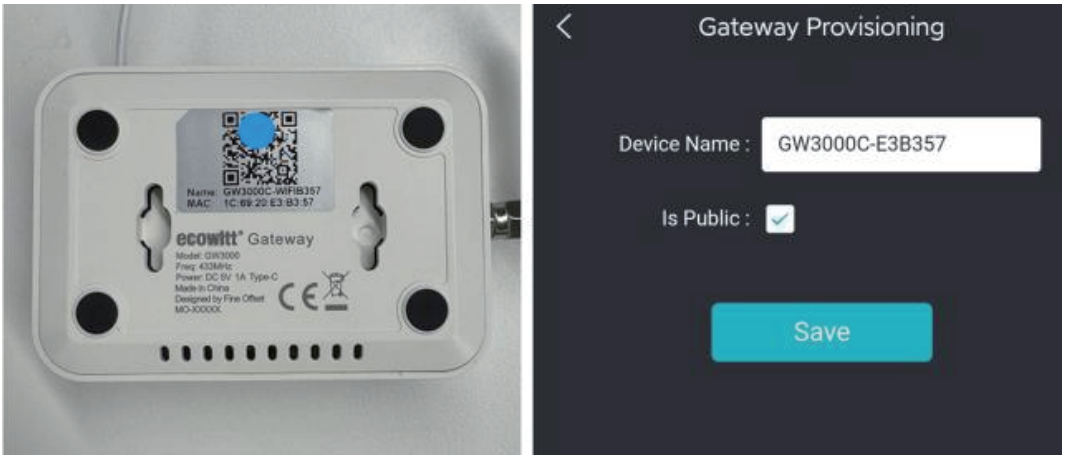


Figure 15

4. Reboot the GW3010, then wait approximately 1~2 minutes for the data to upload to the Ecowitt Weather Cloud.

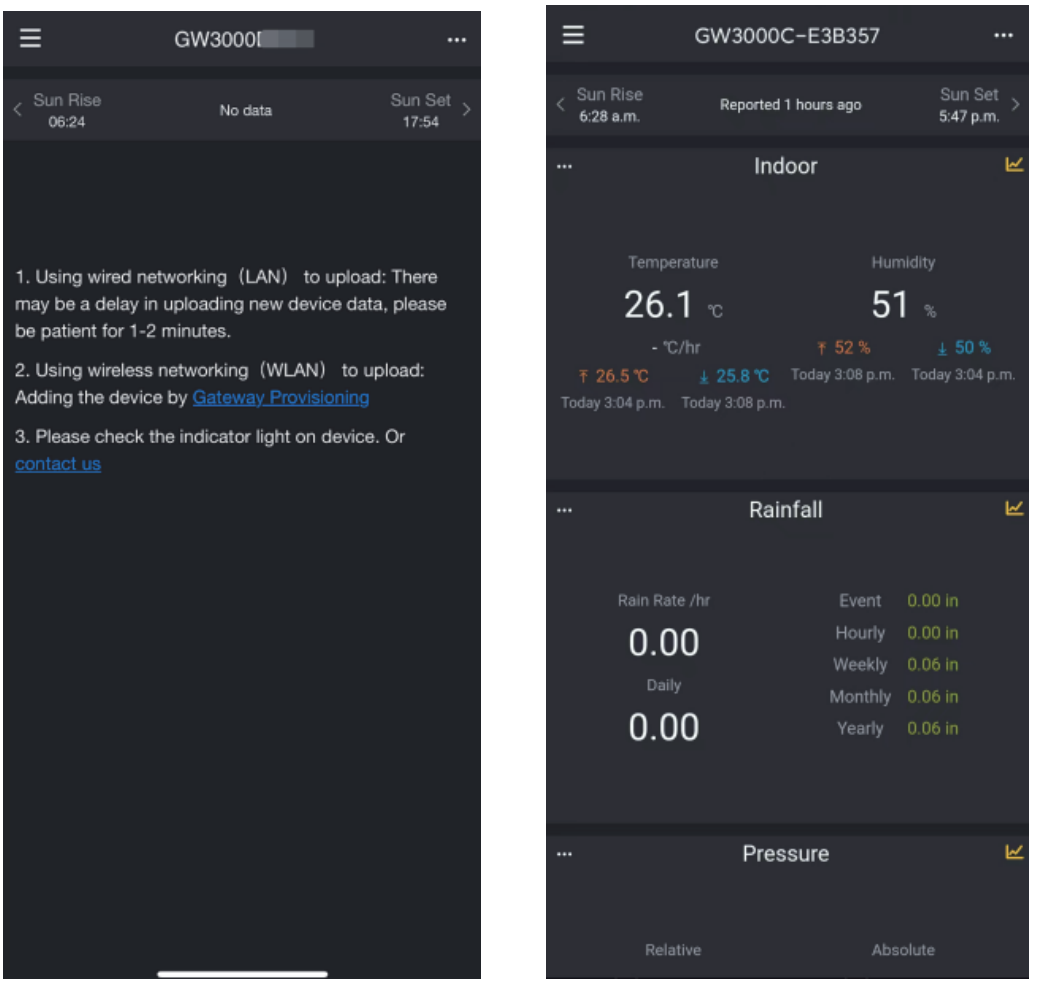

GW3000
Sun Rise
06:24
No data
Sun Set
17:54
1. Using wired networking（LAN） to upload: There may be a delay in uploading new device data, please be patient for 1-2 minutes.
2. Using wireless networking（WLAN） to upload: Adding the device by Gateway Provisioning
3. Please check the indicator light on device. Or contact us
GW3000C-E3B357
Sun Rise
6:28 a.m.
Reported 1 hours ago
Sun Set
5:47 p.m.
Indoor
Temperature
26.1 ℃
- ℃/hr
26.5 ℃
Today 3:04 p.m.
Humidity
51 %
52 %
Today 3:08 p.m.
50 %
25.8 ℃
Today 3:04 p.m.
Today 3:08 p.m.
Rainfall
Rain Rate /hr
0.00
Daily
0.00
Event 0.00 in
Hourly 0.00 in
Weekly 0.06 in
Monthly 0.06 in
Yearly 0.06 in
Pressure
Relative
Absolute

Figure 16

3.5 WiFi Provisioning

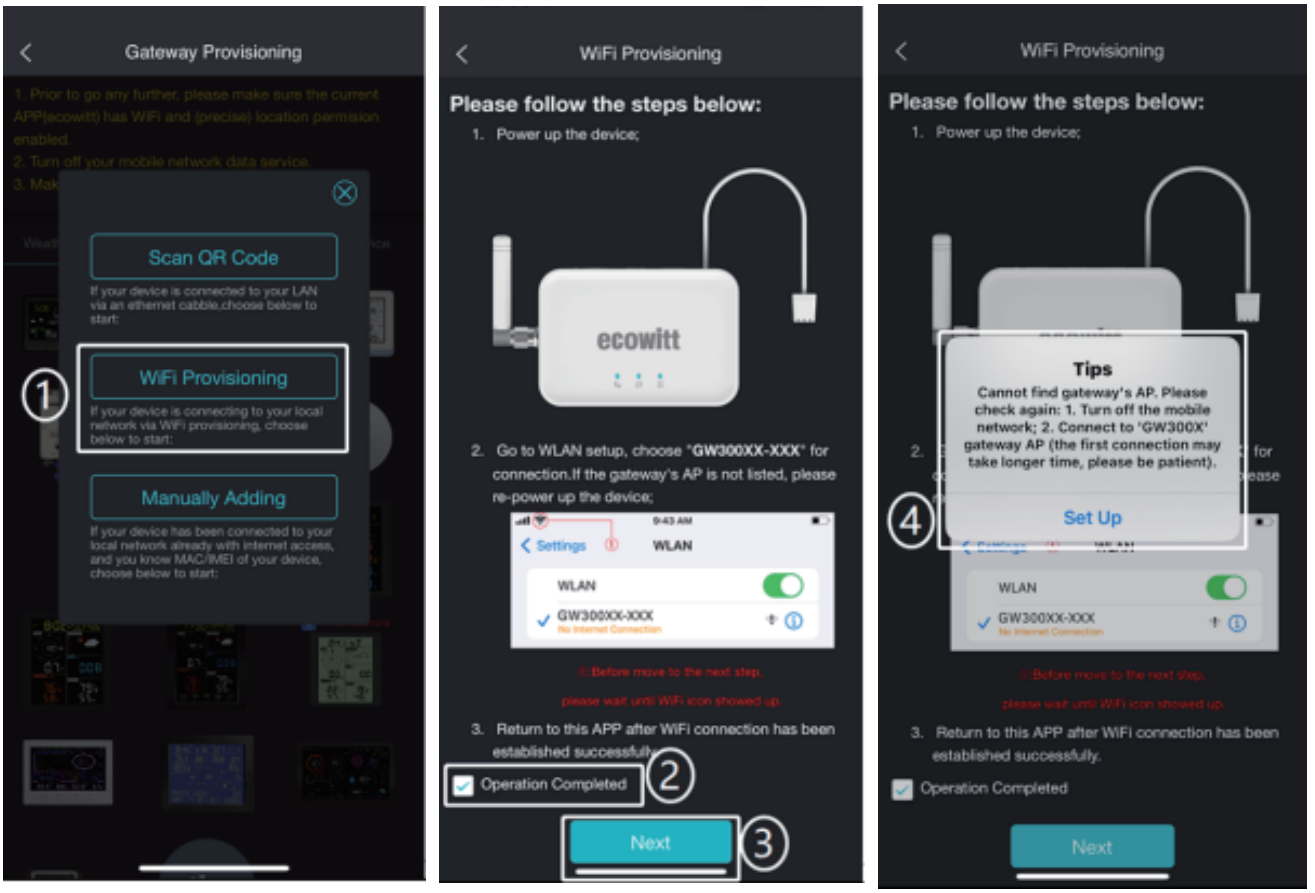


Figure 17 APP Wi-Fi Provisioning Operations

① Open Ecowitt App, click "My Devices", and click "Add New Devices", choose the GW3010's icon to configure the WiFi Provisioning：

② Powering up the GW3010, its inbuilt WLAN access point (the GW3010's hotspot) will be activated within 5 seconds and the blue Wi-Fi LED will flash rapidly.

③ Use your mobile phone to connect to the hotspot (SSID) "GW3000x-WiFixxxx".

(Allow location access, recommended selection is "While Using the App". Fill in the WLAN/WiFi SSID of your local WLAN and the router password.

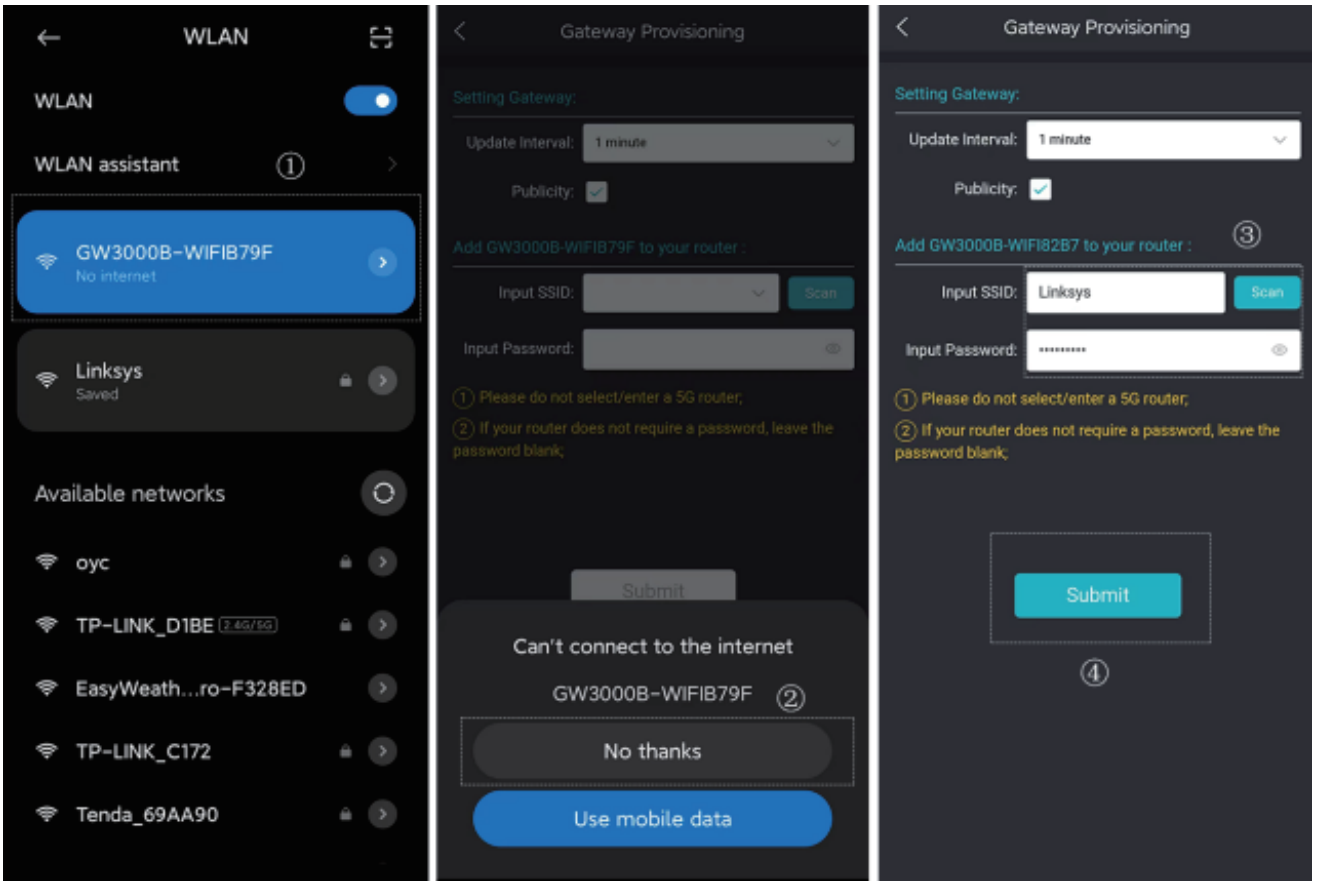


Figure 18

④ After the gateway setup is successful, switch back to your usual wireless network. The GW3010 has been successfully added to the App, and you can view the weather data after a few minutes on the App.

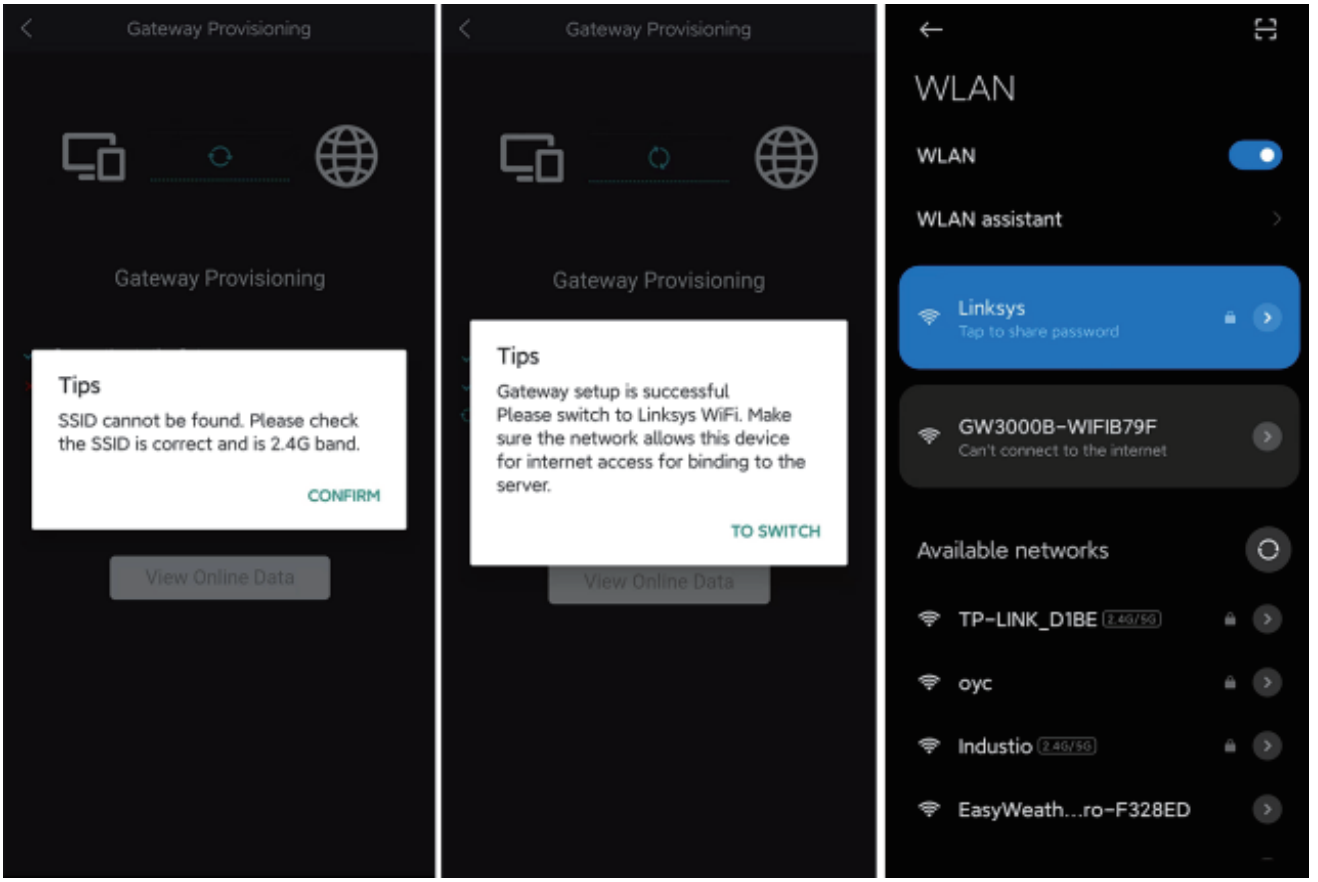


Figure 19

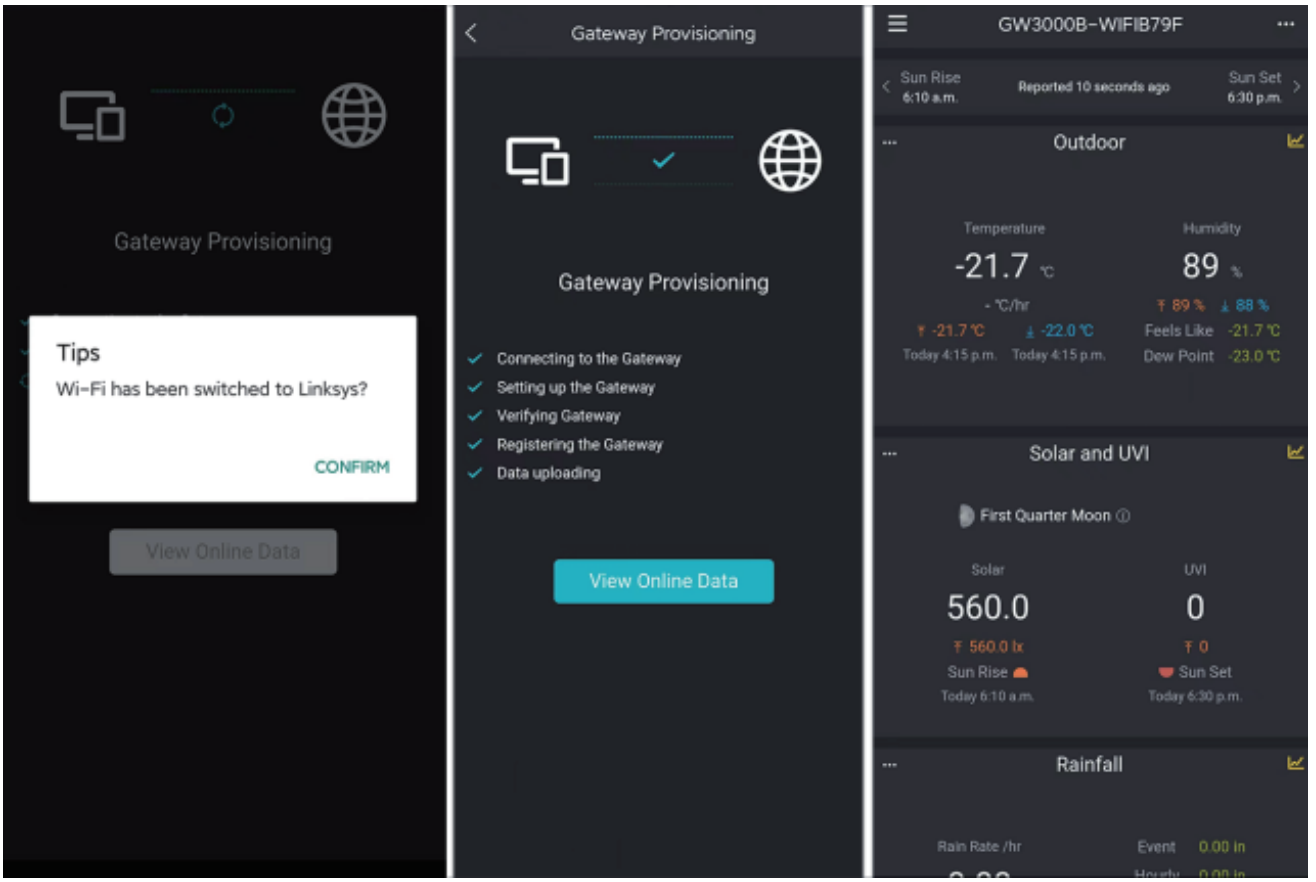


Figure 20

3.6 Manually Adding

For this method the MAC address of the GW3010 is needed. It is printed on the sticker on the bottom of the GW3010, or you can find it on the embedded web page and copy it.

Add the GW3010 to your Ecowitt Account

1.Open Ecowitt App, click "My Devices", and click "Add New Devices", choose the GW3010's icon to configure the Manually Adding：

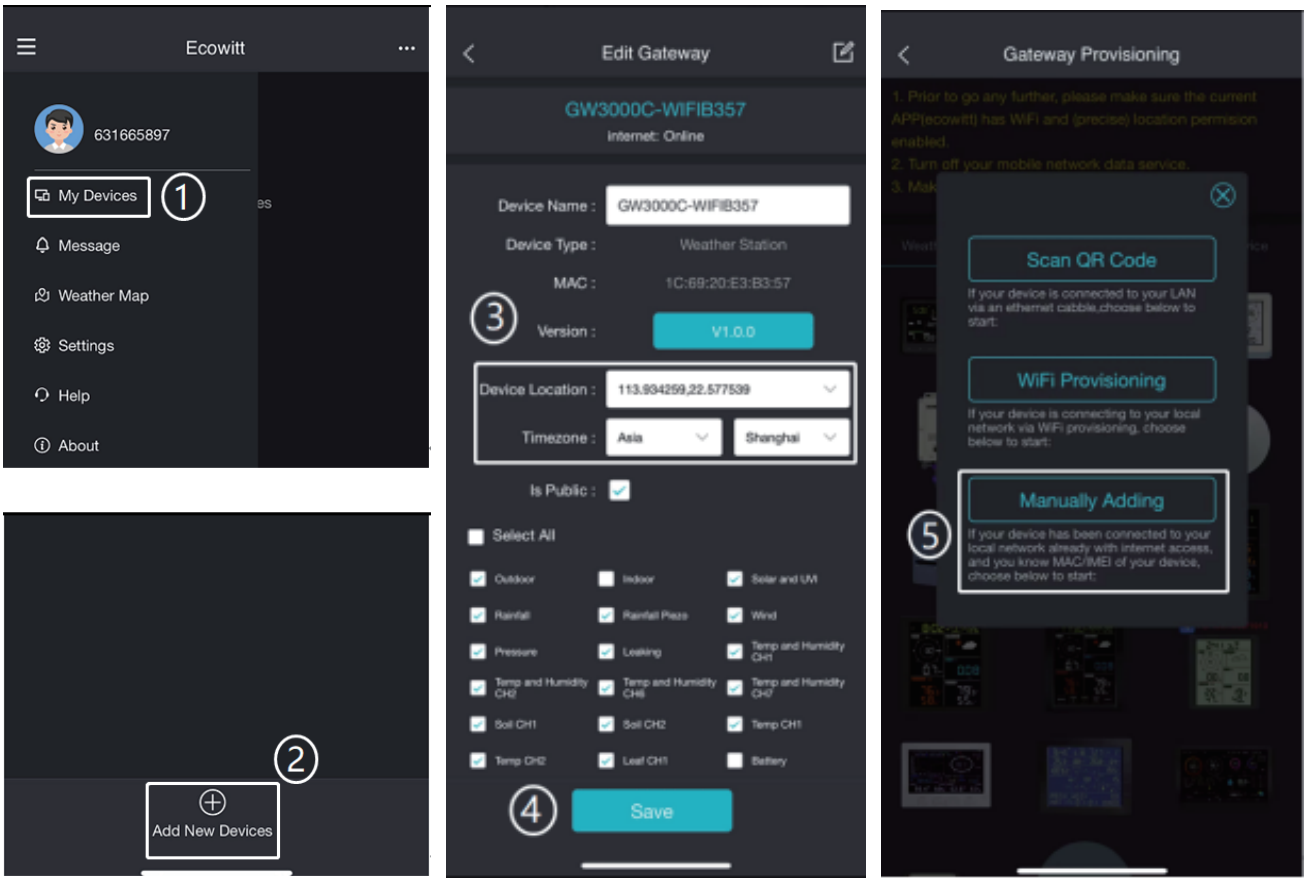


Figure 21

2.Edit the Device Name and paste the MAC address copied into the box. Then click "Save," and you can view the data on the App. You may have to wait for about one minute until data have been transferred and become visible.

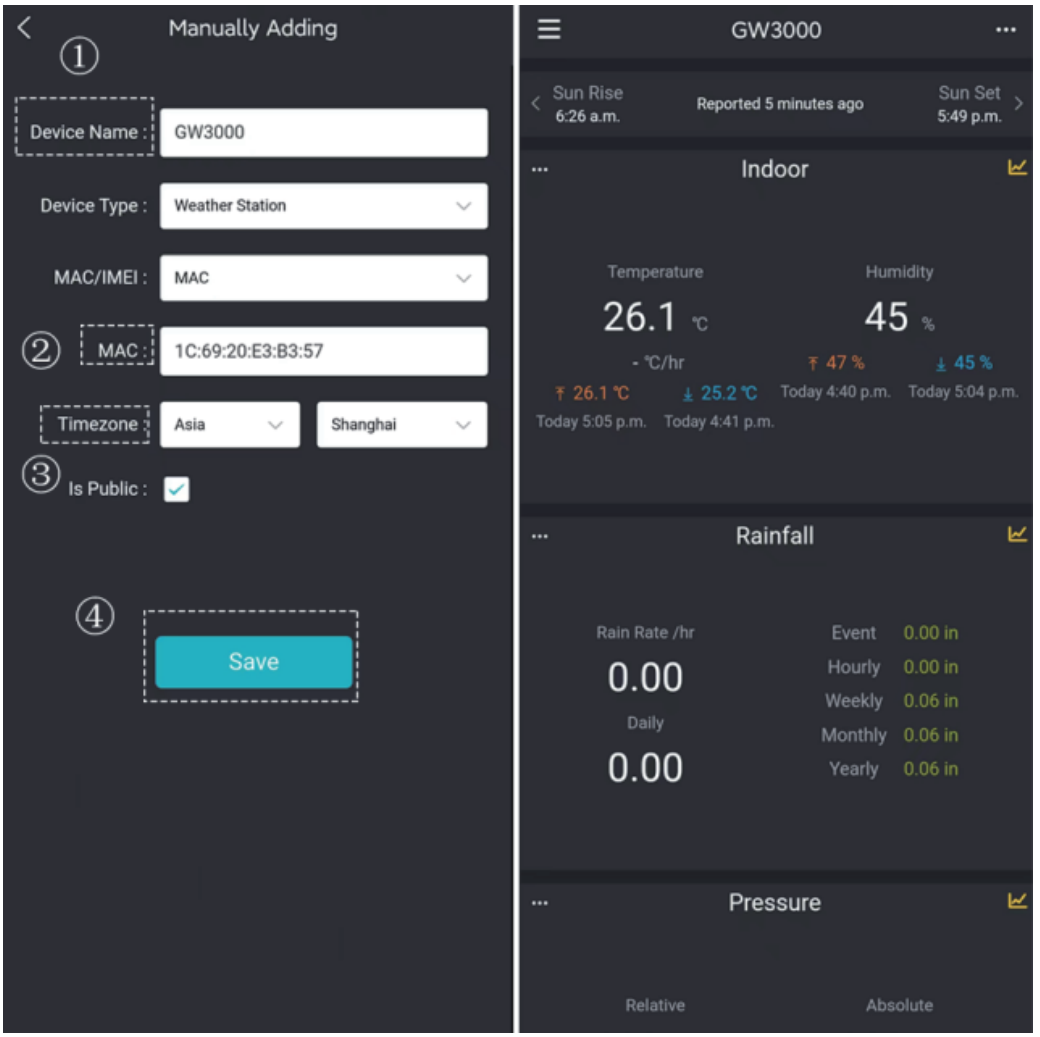

Manually Adding
①
Device Name :
GW3000
Device Type :
Weather Station
MAC/IMEI :
MAC
②
MAC :
1C:69:20:E3:B3:57
Timezone :
Asia
Shanghai
③
Is Public :
④
Save
GW3000
Sun Rise
6:26 a.m.
Reported 5 minutes ago
Sun Set
5:49 p.m.
Indoor
Temperature
26.1 ℃
Humidity
45 %
- ℃/hr
47 %
45 %
26.1 ℃
25.2 ℃
Today 4:40 p.m.
Today 5:04 p.m.
Today 5:05 p.m.
Today 4:41 p.m.
Rainfall
Rain Rate /hr
0.00
Daily
0.00
Event 0.00 in
Hourly 0.00 in
Weekly 0.06 in
Monthly 0.06 in
Yearly 0.06 in
Pressure
Relative
Absolute

Figure 22

4 Setup your new device in the Ecowitt APP

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

After you have completed the WiFi connection, please follow these steps for the firmware upgrade, device's location, timezone, DST (Daylight Saving Time), and data view (public/private) settings.

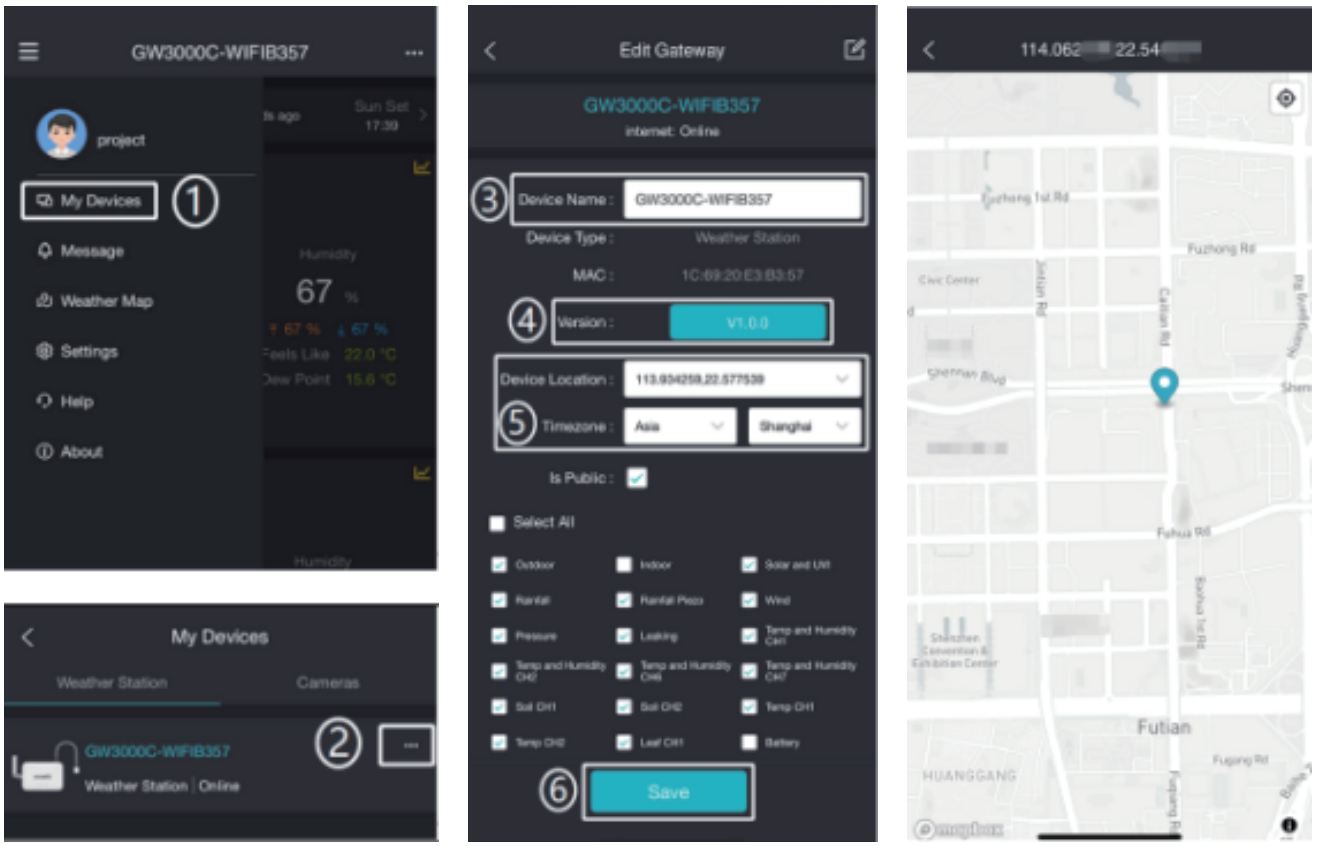


Figure 23

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.

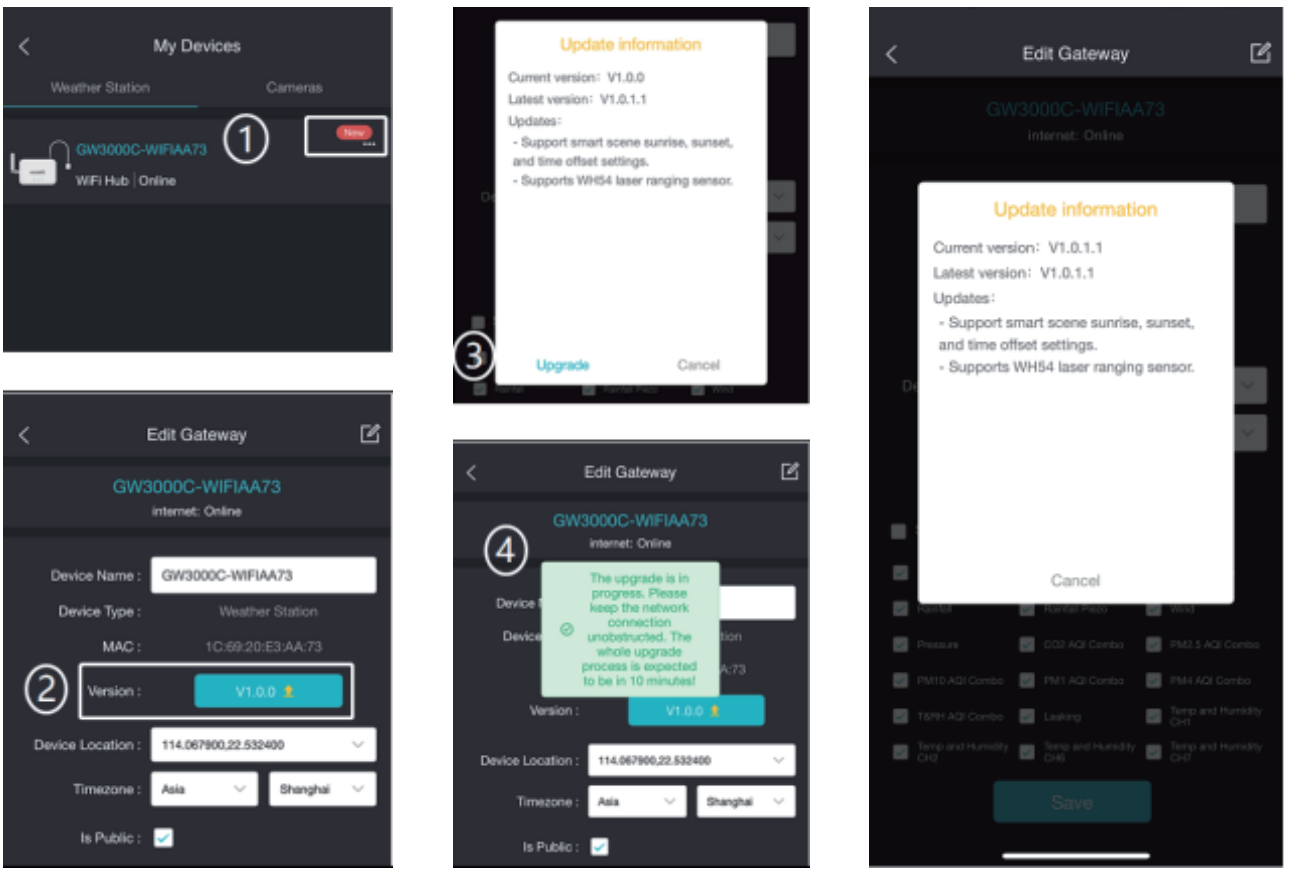


Figure 24

5. Devices Management with the Ecowitt APP

5.1 How to Delete your GW3010 from the Ecowitt.net Dashboard device list

Pressing the GW3010 entry till the delete icon appears, press it, then choose Delete or Reset.

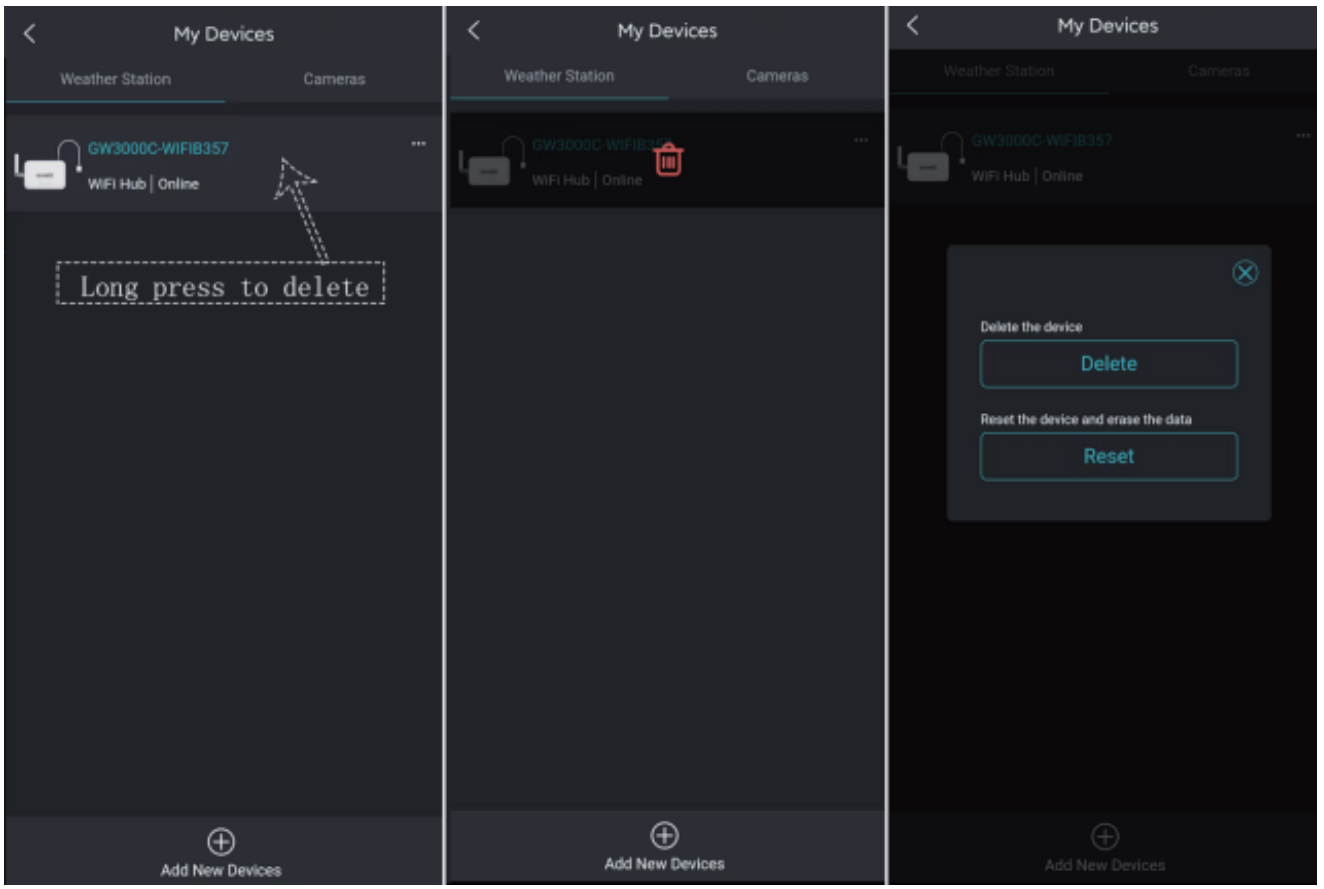


Figure 25

5.2 Manage Sensors

① Add a Sensor

To pair the optional sensors (refer to Section Optional Sensors) with the GW3010, please do as follows:

1.Place the optional sensor next 1m to the receiver.

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

3.Check whether the GW3010 has picked up the sensor data automatically and displays it on the app.

4.If data is not received, try the following: Make sure the phone and GW3010 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. The sensor ID can be found on a sticker on the sensor.

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

7.If you want to register multiple sensors of the same type

(e.g. WH51 soil moisture sensors) and want to put them in a special sequence, do step 5 repeatedly for each sensor entry.

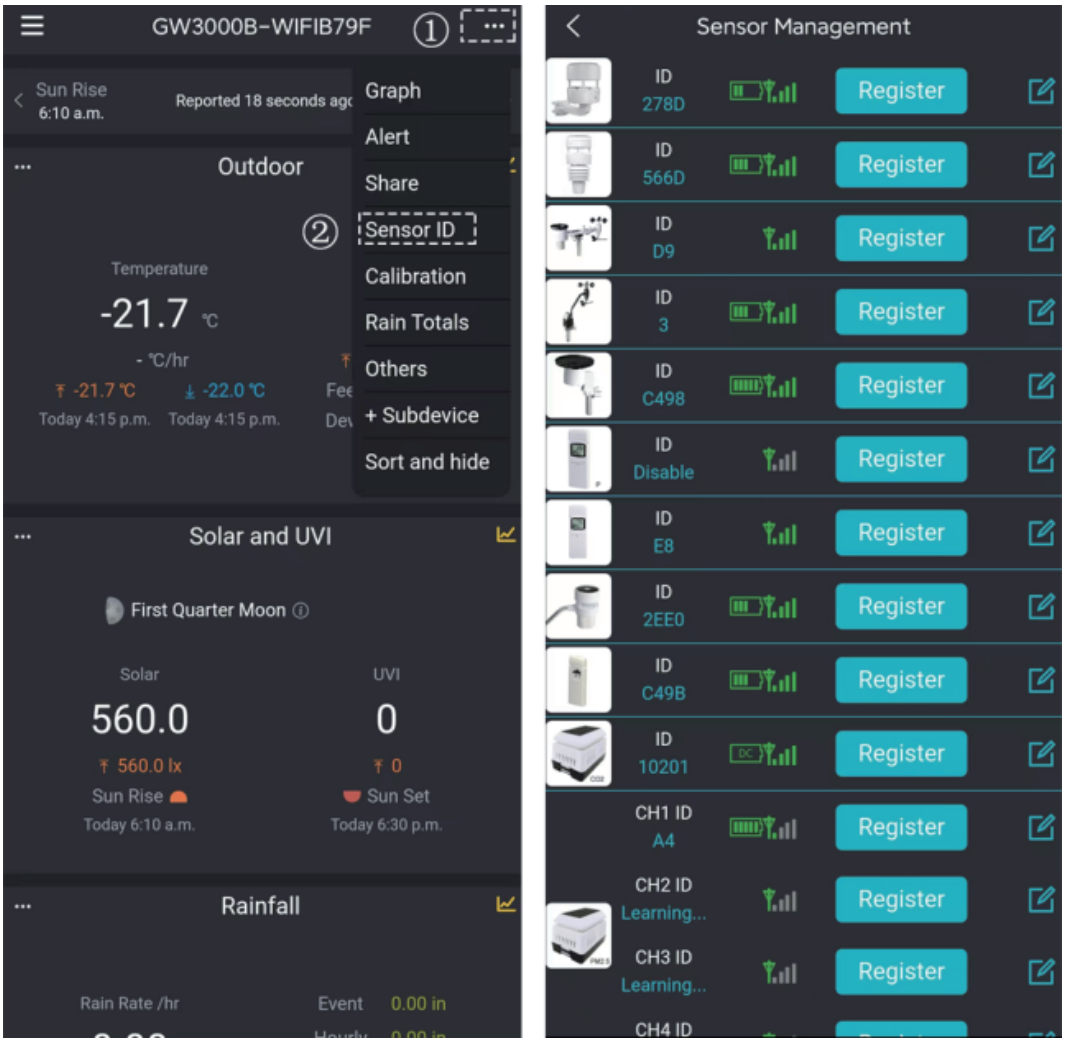


Figure 26 Sensor ID Page

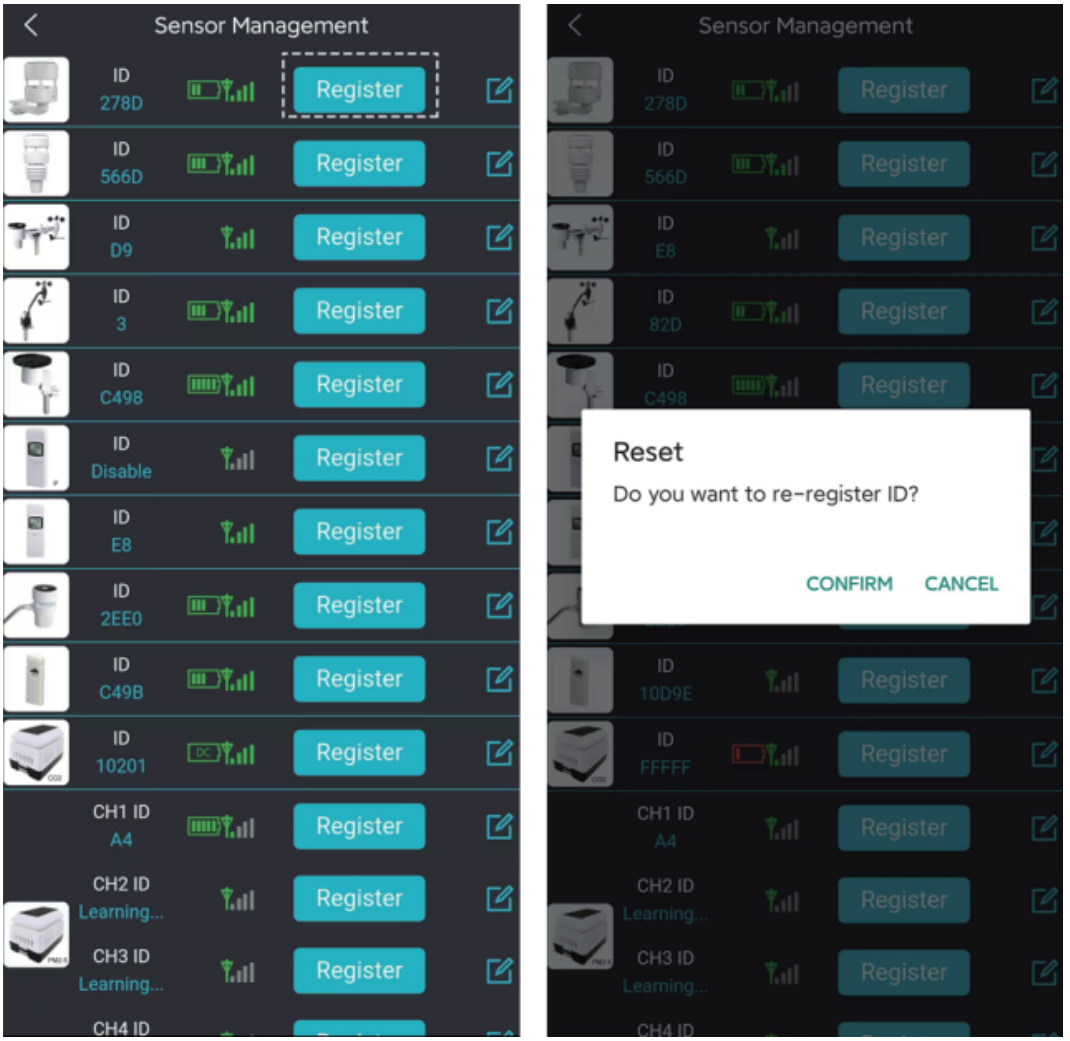


Figure 27 Re-register Sensor

② Disable (Stop) a Sensor

Suppose you have more than one gateway and want to assign your sensors to different gateways/consoles, completely separate or in groups (the same sensor can be registered with multiple consoles), the following actions can help you prevent the gateway from automatically receiving data from

other sensors.

If you have 2 or more sensors of the same model, and GW3010 receives data from one of them and you want to receive data from another one instead:

1.Tap the icon of editing.

2.Manually input the sensor ID of the transmitter you wish to receive on sensor entry

3.Set its status to Enabled.

4.Tap "Save" to save the settings successfully.

When the GW3010 receives data from an unwanted sensor (or in an unwanted position):

1.Tap the icon of editing.

2.Manually input the default sensor ID to lock onto this sensor.

3.Set its status to Disabled.

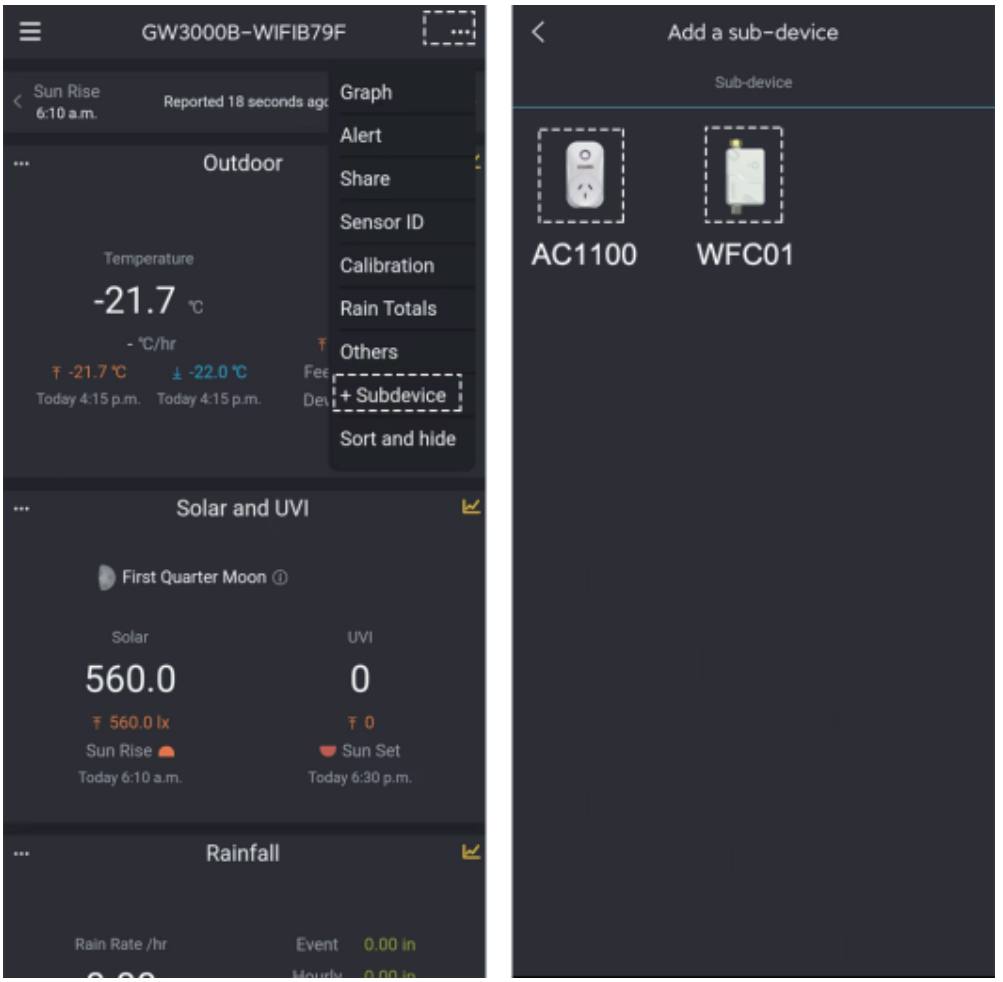
4.Tap "Save" to apply this lock immediately.

5.Add the sensor to the wanted place as shown before.

Figure 28 Disable a Sensor

③ Add a Sub-device

The GW3010 is the latest generation gateway that supports smart control devices also called house-automation or IoT devices (IoT: internet of things). It can operate one or more WFC01 and AC1100 devices and other in future released smart equipment. Below, we will demonstrate the connection methods for a GW3010 with the WFC01 (smart water valve) or AC1100 (smart power switch) devices.



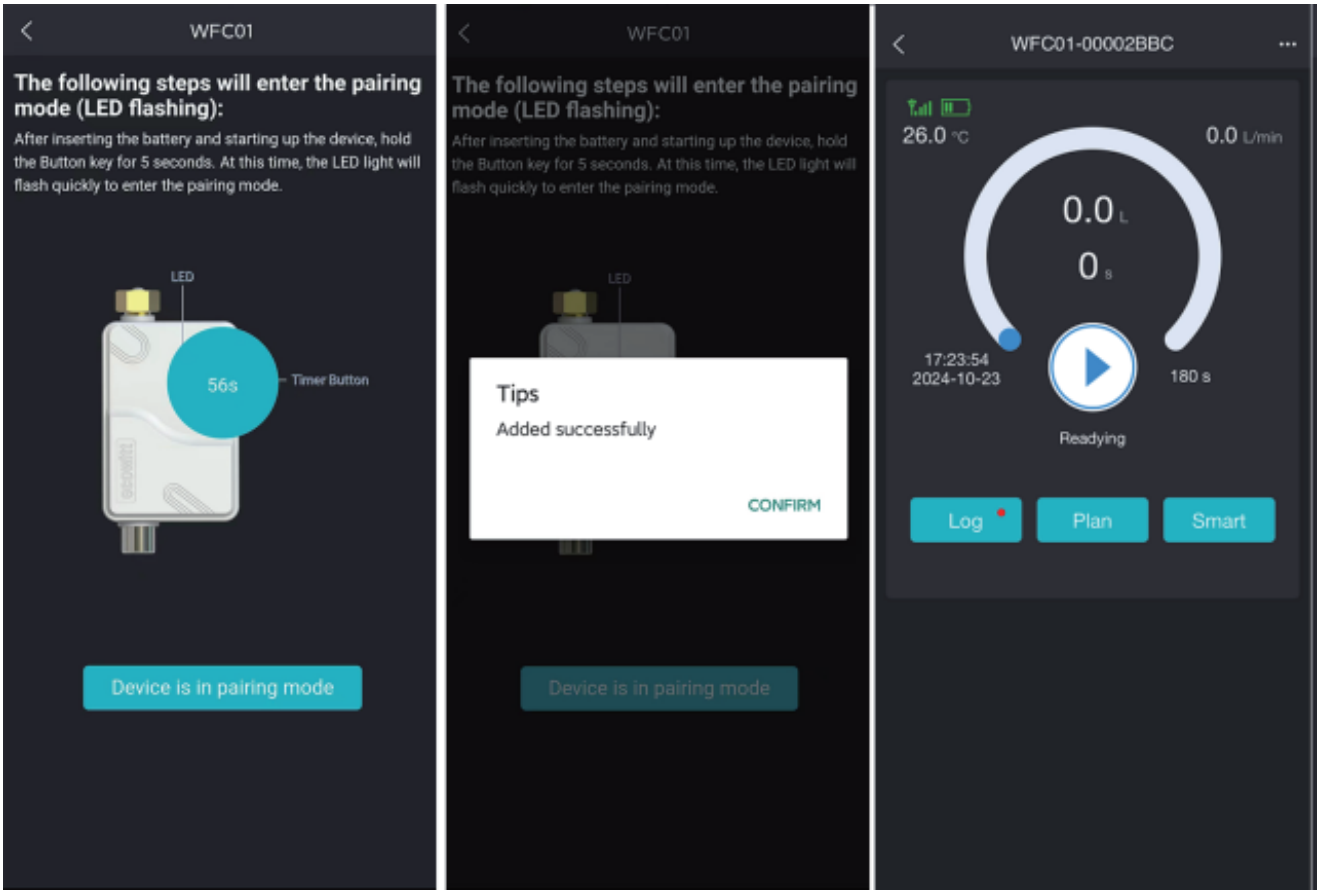


Figure 29 Connecting a WFC01/AC1100

6. Managing Settings with the Ecowitt APP

6.1 Calibration of sensors

Sensors are usually already factory calibrated, but in certain cases their readings need location dependent correction (e.g. local and sea level normalized air pressure, UVI etc.) or you may choose to correct their readings based on your own discretion.

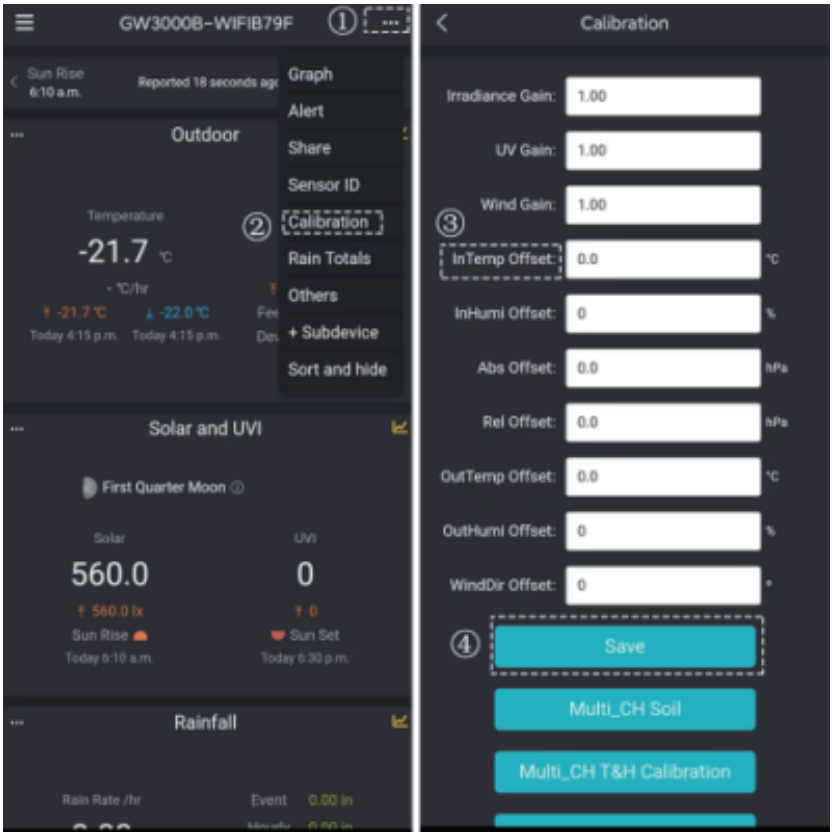


Figure 30

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(Use Indoor temperature as an illustration in the Figure 28). Calculate the offset of data from the accurate weather station and ecowitt sensor.
4. Fill in the offset from step 3, and click Save.

6.2 Air Pressure Calibration

Your console/gateway will usually show two barometric values
1. Local air pressure or Absolute Pressure
this is what the inbuilt pressure sensor measures
2. Sea level pressure or relative pressure
a so-called normalized value which makes your air pressure comparable with other barometers (or weather stations)
this needs to be calculated depending on the altitude of your barometer
(altitude = ground elevation plus height above ground)

when the console/gateway gets delivered both absolute and relative pressure are the same. So, you have to enter the offset before the proper relative pressure is shown.

what so far has been used with Ecowitt consoles is to calculate the difference between local pressure and sea level pressure (offset) and enter this as a positive value into the **Rel. Offset** field.

In the internet there are many calculators available which you can use to calculate your specific offset. What you need to know is the local pressure provided by your console/ pressure, your altitude and the temperature. It's best to use hPa as pressure unit for the calculation. If you are used to mmHg, you can change the units after the calibration is completed.

6.3 UVI Calibration

UVI calibration needs to be done as the data provided by the solar sensor alone are not sufficient for a proper UVI factor. We recommend recording the UVI value from your console over one daily sunshine period on a summer day with blue sky and no clouds. Then check what the next official weather station for UV radiation provides as data, compare with your

data and calculate the factor by which you have to multiply your data to match the official data. This would often be something between 0.65 and 0.75, but the value also depends on your geographical latitude.

6.4 Rain Settings on the Ecowitt APP

① Rainfall Data Priority Setting

If you have multiple rainfall sensors with different measurement technologies, you can set the priority to display the data from one of them on a console.

You can choose between a traditional rain gauge with tipping bucket technology or a haptic rain gauge with piezoelectric technology.

The choices will only be offered if the respective sensor is registered to your console (WS69 or WH40 for traditional and WS85 or WS90 for piezoelectric). Only, when the rainfall priority piezoelectric is chosen, the data fields for calibration of the piezoelectric rain sensor are shown and are editable.

The rain gauge can be calibrated using a linear factor (gain) by which the measured value will be multiplied. The

default values are 1.0. The piezoelectric rain gauge has five different factors for different rain rate ranges.

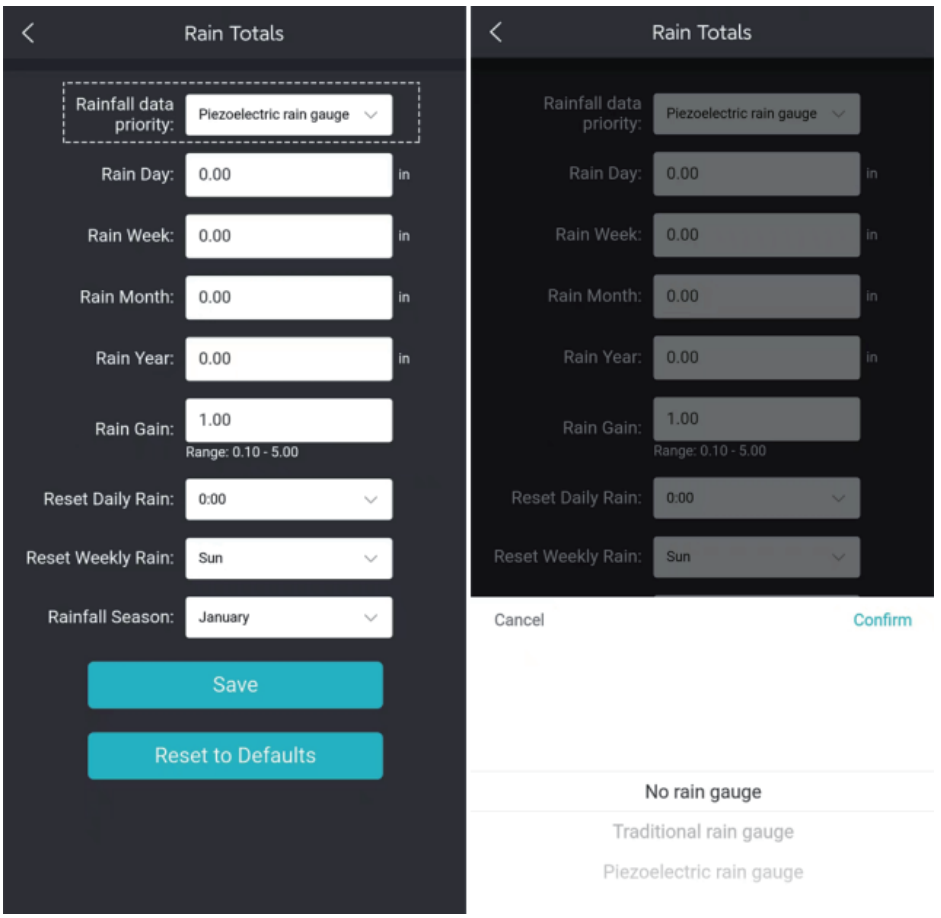


Figure 31 Rainfall Data Priority Setting

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.

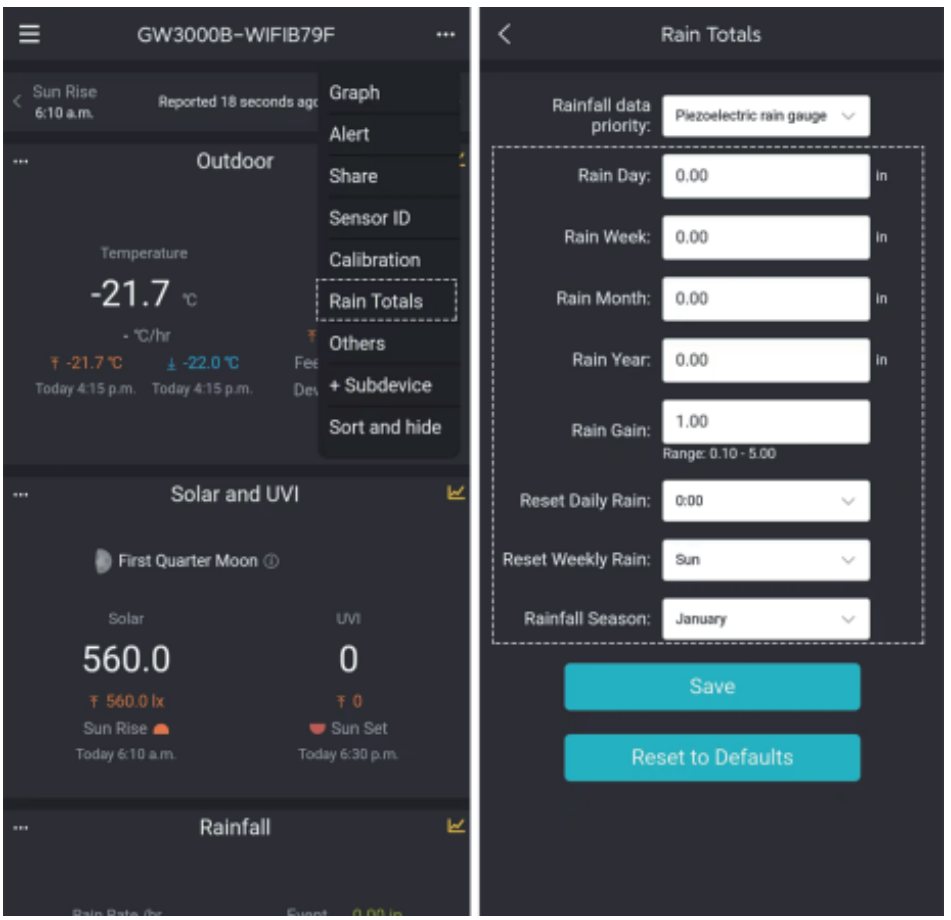


Figure 32

6.5 Units and Other Settings

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

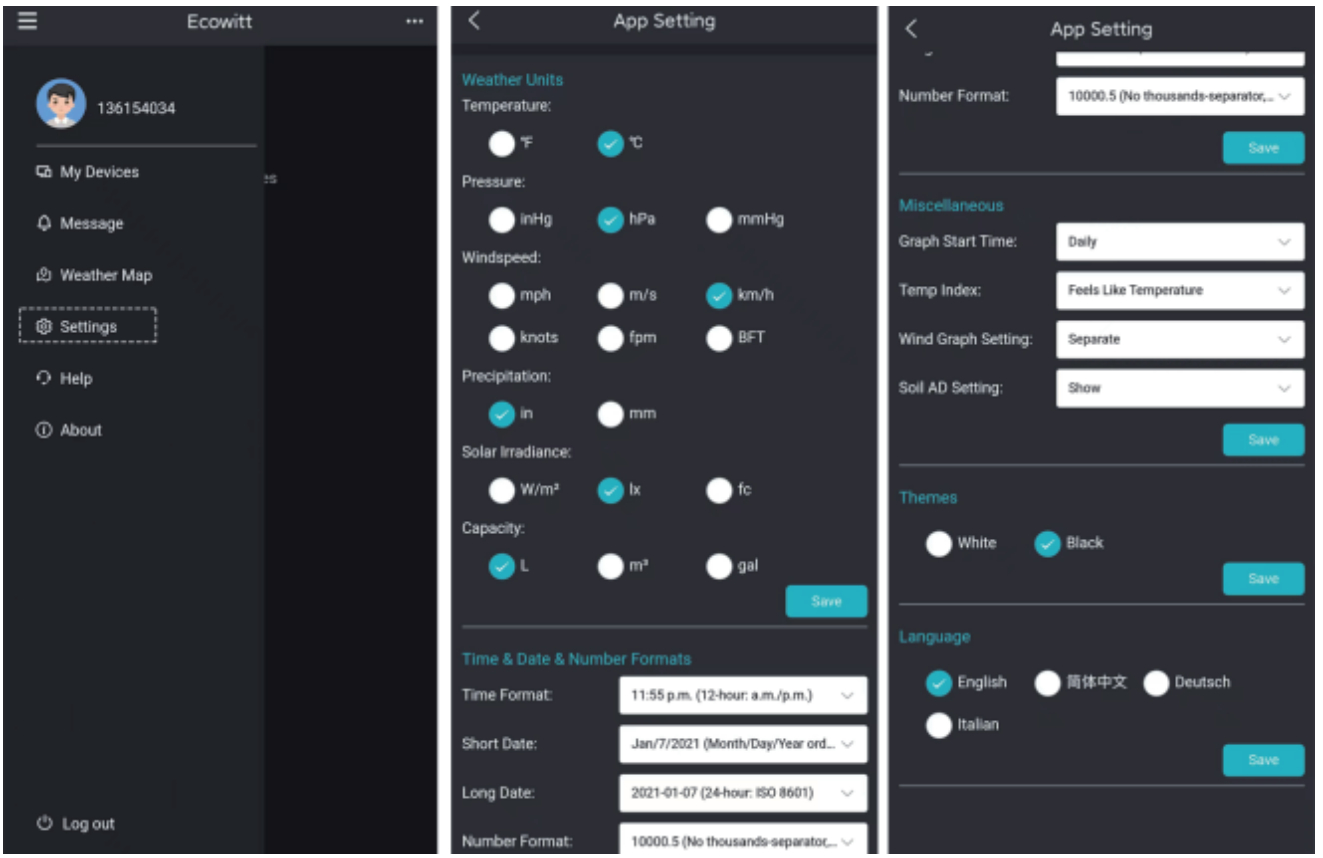


Figure 33 App Setting

7. Network provisioning with the Web UI

The Web UI (web page-based user interface) 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, manage SD card files, and more.

7.1 How to Access the Web UI

Holding the "Reset" button of the GW3010 for 5 seconds will turn on its WiFi Access Point (hotspot) for 5 minutes. Connect, either with the web browser of your smartphone/tablet or with your PC to the GW3010's AP. The SSID is "GW3000X-WiFixxxx). Enter 192.168.4.1 in the browser. Log in with the default username (admin) and the password, which is blank.

If your gateway is already connected to a local network, the WebUI can also be reached via the IP address the gateway has received or has been configured earlier.

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

1.Ensure that your mobile phone or laptop is connected to the GW3010's hotspot emitted by the device.

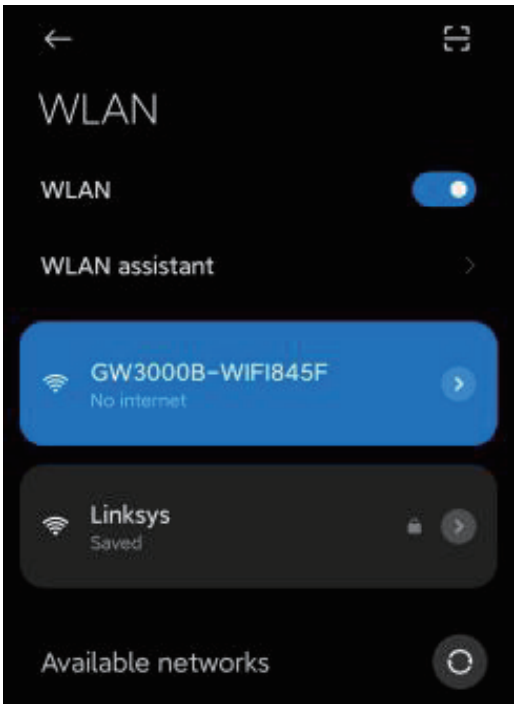


Figure 34

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

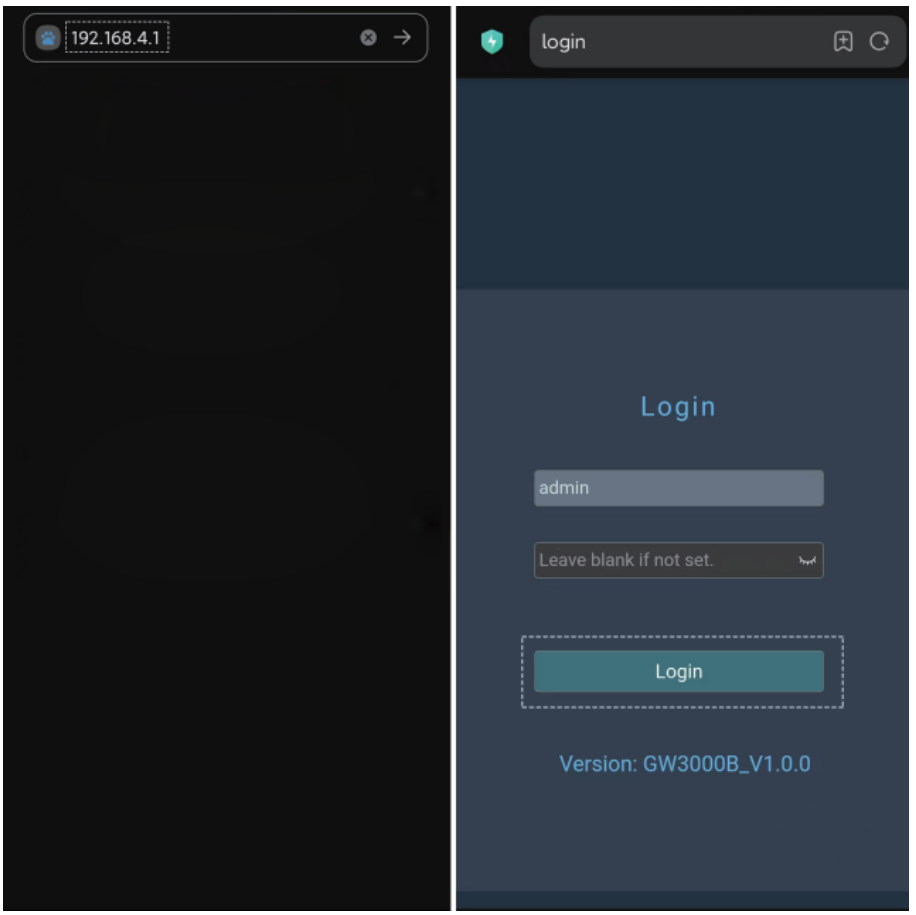


Figure 35

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

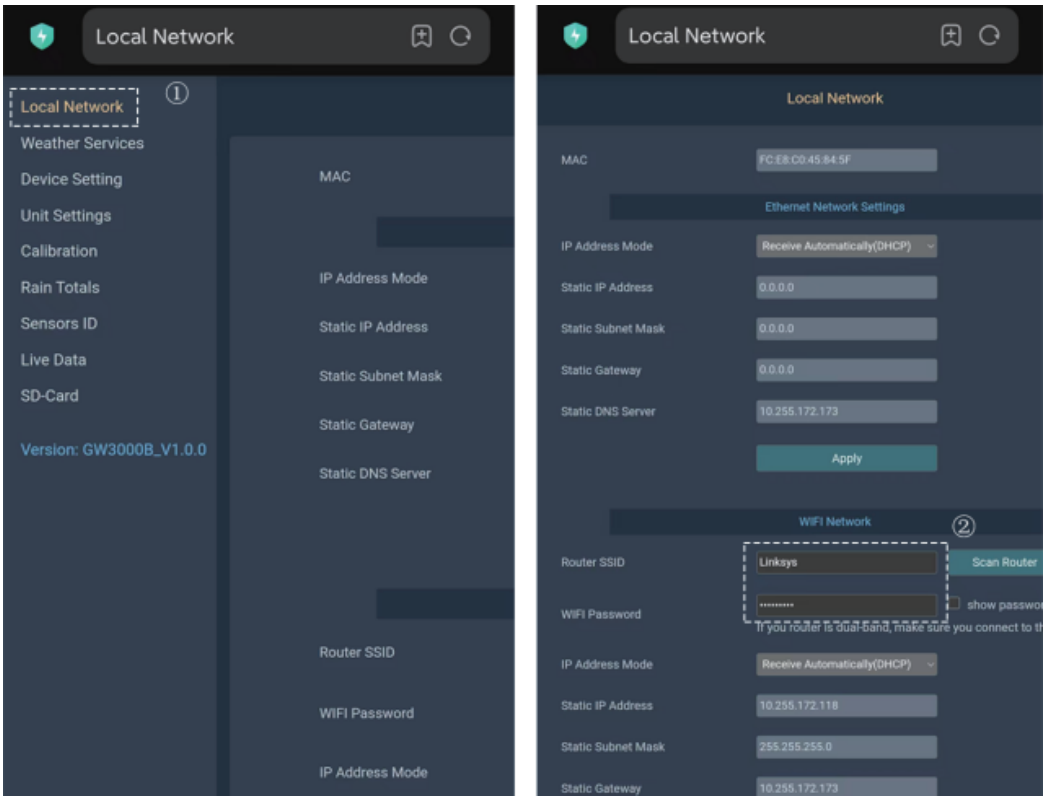


Figure 36

7.2 Local Network on Web UI

This page supports viewing or settings for the LAN and WLAN interface:

(1) MAC address

(2) WLAN: the WLAN interface of the gateway to connect to the router, can be switched off

(3) IP Address Mode: Receive Automatically (DHCP) or Static

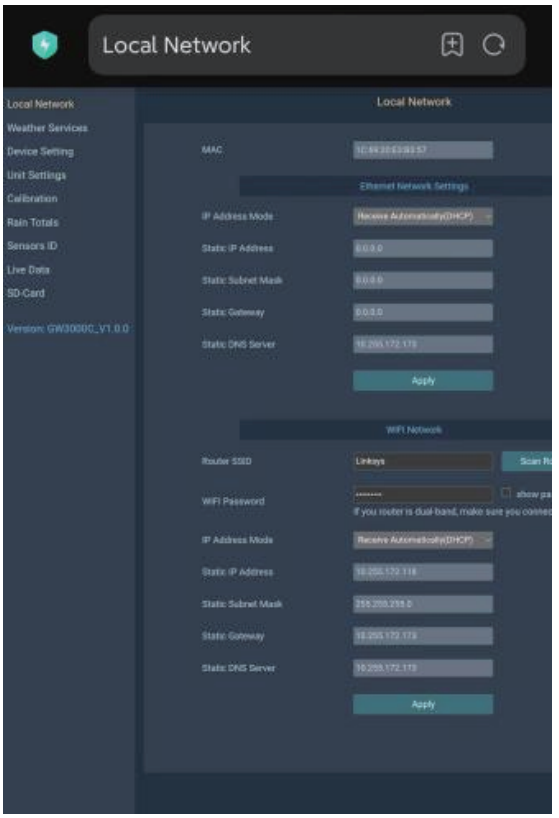


Figure 37

7.3 Device Settings with the 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 has a lot of traffic on the sensor RF radio spectrum to improve signal reception.
3.Temperature Compensation: Turn on this option to minimize sunlight 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.Check firmware button
performs a check for new firmware, usually indicated by a red dot at the "Device Setting" menu entry.

If new firmware is available, the option to download will be offered along with a list of changes made to the firmware.
If no new firmware is available, the list of changes for the current firmware will be shown.

7.Automatically switch of AP with this option tagged the inbuilt hotspot will be switched off five minutes after a wireless connection with the router was established via the hotspot (this is different from switching off the WLAN interface as a whole)

8.Login & AP Password

9.Restore default: reset the gateway to the factory default settings.
(all formerly changed calibration and rain total values will be reset to their default values, also sensor assignment will be reset – note down all your settings before performing a factory reset as you will have to restore the values manually)

The checkbox changes take effect immediately after saving and are not lost when the power is dropped.

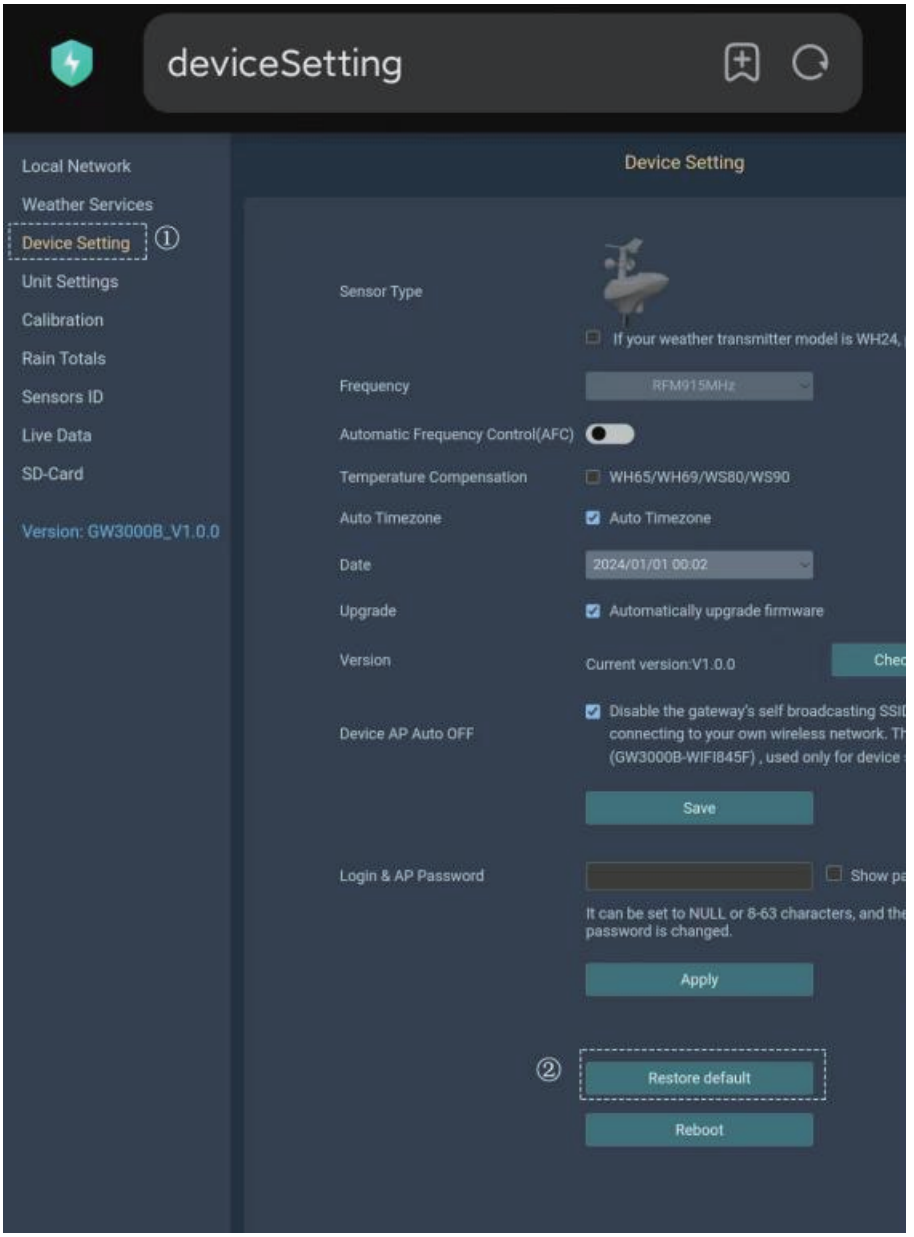

deviceSetting
Local Network
Weather Services
Device Setting
①
Unit Settings
Calibration
Rain Totals
Sensors ID
Live Data
SD-Card
Version: GW3000B_V1.0.0
Device Setting
Sensor Type
If your weather transmitter model is WH24,
Frequency
RFM915MHz
Automatic Frequency Control(AFC)
Temperature Compensation
WH65/WH69/WS80/WS90
Auto Timezone
Auto Timezone
Date
2024/01/01 00:02
Upgrade
Automatically upgrade firmware
Version
Current version:V1.0.0
Device AP Auto OFF
Save
Login & AP Password
Apply
②
Restore default
Reboot

Figure 38

7.4 Firmware Upgrade Via Web UI

If you choose "Automatically upgrade firmware" on the web page 192.168.4.1, the GW3010 will download the new firmware whenever there is new firmware available and reboot automatically after installation (Automatic upgrade check interval is 24 hours).

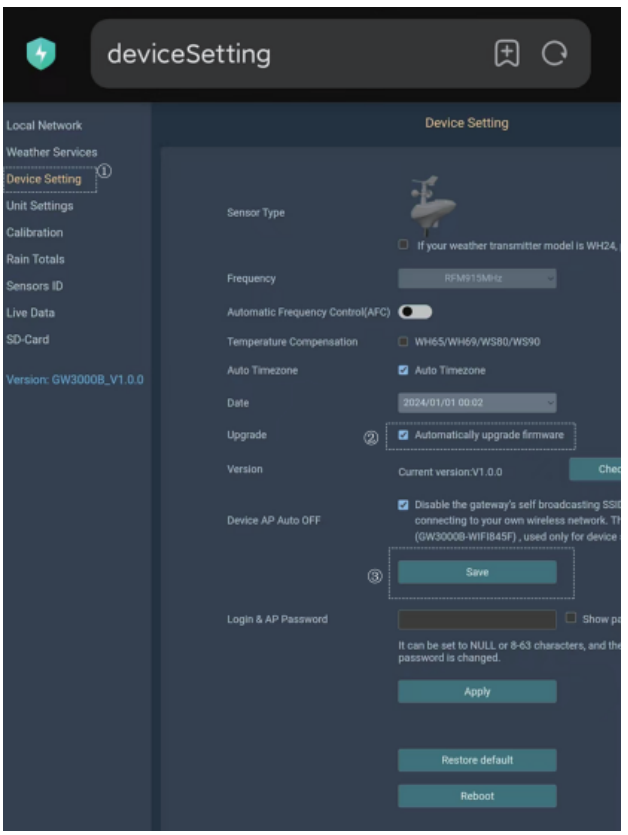


Figure 39 Firmware Upgrade via Web Page

7.5 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

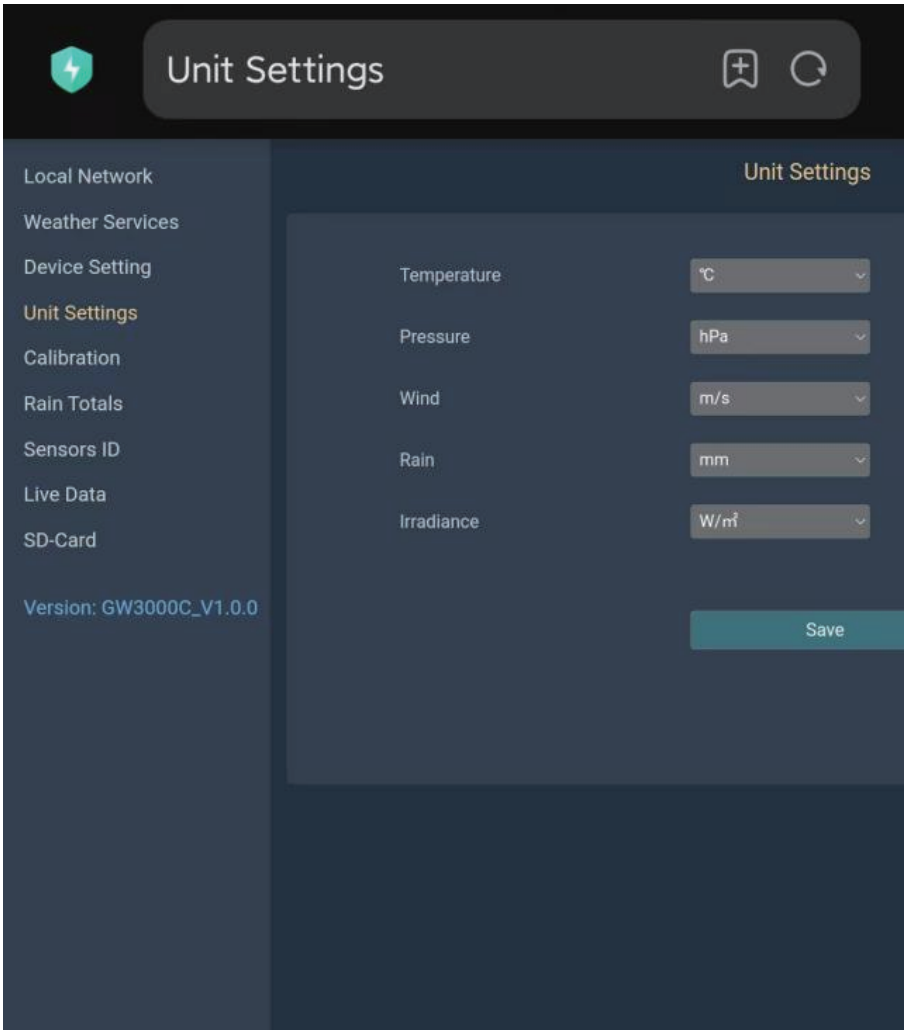

Unit Settings
Local Network
Weather Services
Device Setting
Unit Settings
Calibration
Rain Totals
Sensors ID
Live Data
SD-Card
Version: GW3000C_V1.0.0
Unit Settings
Temperature
℃
Pressure
hPa
Wind
m/s
Rain
mm
Irradiance
W/m²
Save

Figure 40

7.6 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) Relative Pressure

(8) Outdoor Temperature

(9) Outdoor Humidity

(10) Wind Direction

(11) Soil Moisture

(12) Multi-Channel Temperature & Humidity

(13) Multi-Channel Temperature

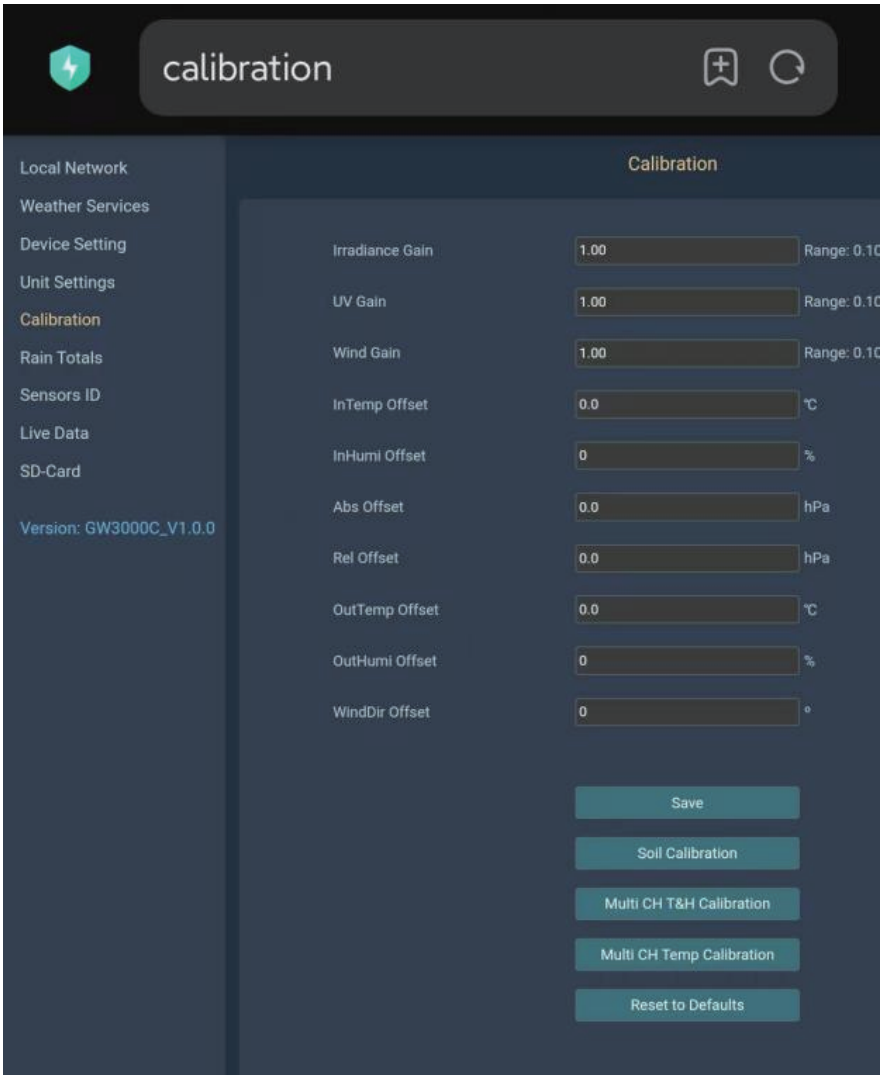

calibration
Local Network
Weather Services
Device Setting
Unit Settings
Calibration
Rain Totals
Sensors ID
Live Data
SD-Card
Version: GW3000C_V1.0.0
Calibration
Irradiance Gain
1.00
Range: 0.1
UV Gain
1.00
Range: 0.1
Wind Gain
1.00
Range: 0.1
InTemp Offset
0.0
℃
InHumi Offset
0
%
Abs Offset
0.0
hPa
Rel Offset
0.0
hPa
OutTemp Offset
0.0
℃
OutHumi Offset
0
%
WindDir Offset
0
°
Save
Soil Calibration
Multi CH T&H Calibration
Multi CH Temp Calibration
Reset to Defaults

Figure 41

7.7 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
The 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.

As a sanity check the sensor also verifies if there is water present along with the vibration to exclude effects produced by other vibrations.

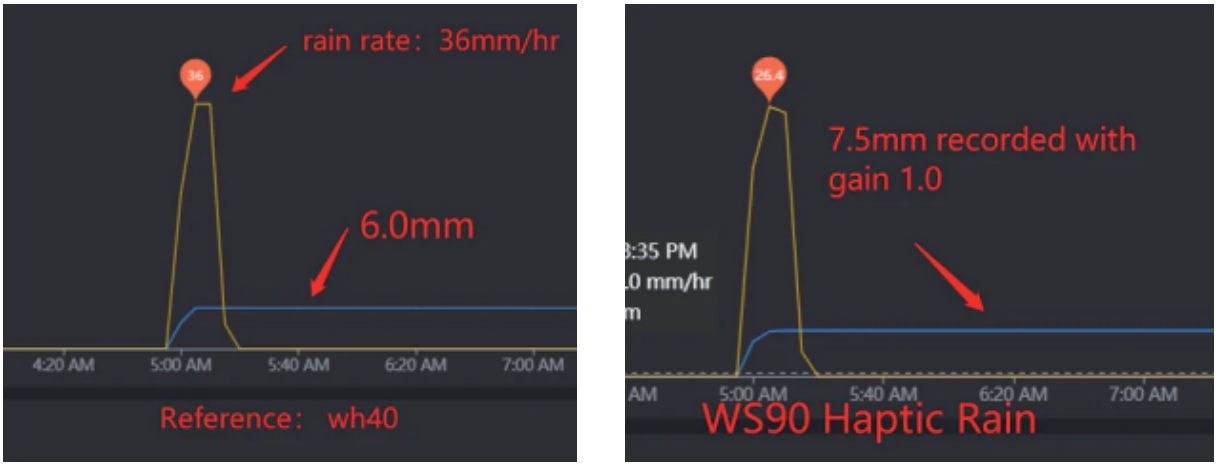


Figure 42

WS90 and WS85 are weather sensor arrays 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.

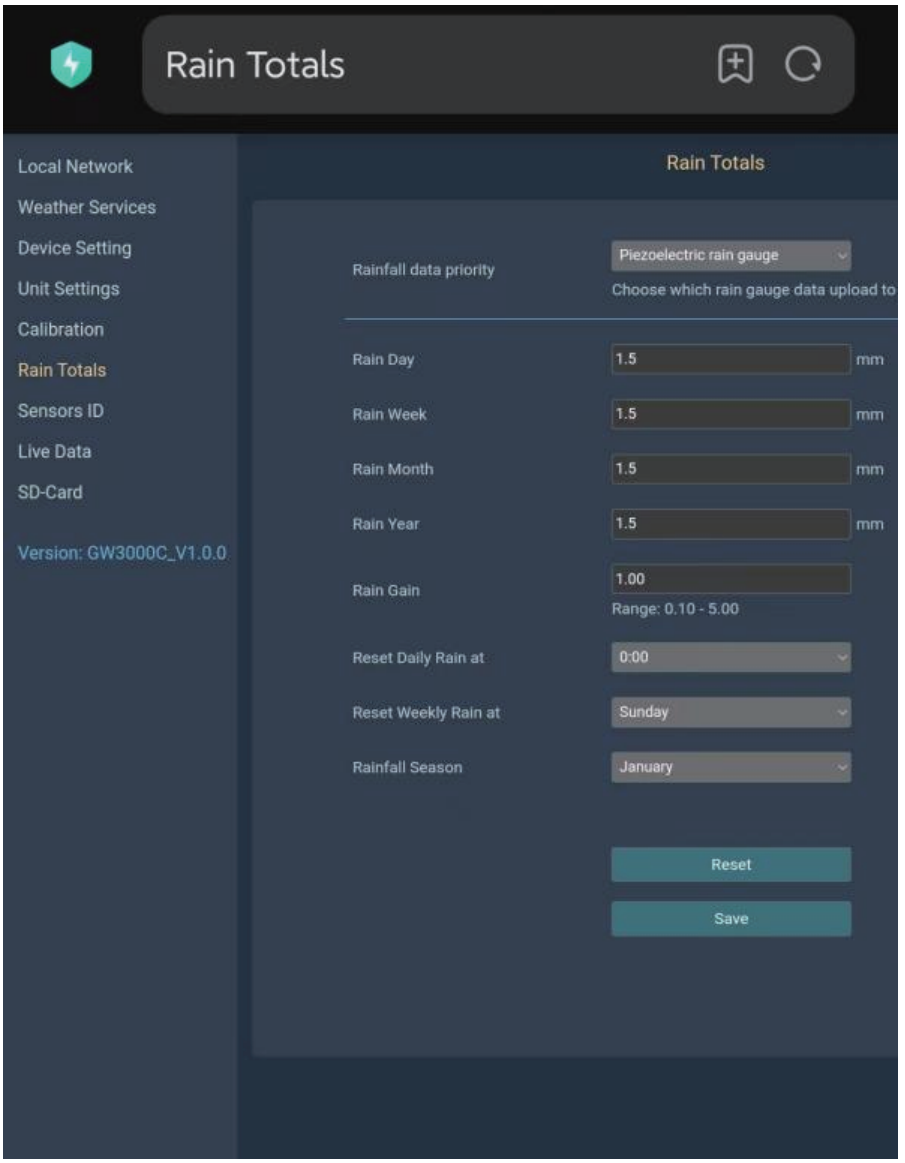

Rain Totals
Local Network
Weather Services
Device Setting
Unit Settings
Calibration
Rain Totals
Sensors ID
Live Data
SD-Card
Version: GW3000C_V1.0.0
Rain Totals
Rainfall data priority
Piezoelectric rain gauge
Choose which rain gauge data upload to
Rain Day
1.5
mm
Rain Week
1.5
mm
Rain Month
1.5
mm
Rain Year
1.5
mm
Rain Gain
1.00
Range: 0.10 - 5.00
Reset Daily Rain at
0:00
Reset Weekly Rain at
Sunday
Rainfall Season
January
Reset
Save

Figure 43

7.8 Sensor ID configuration with the 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 updated:

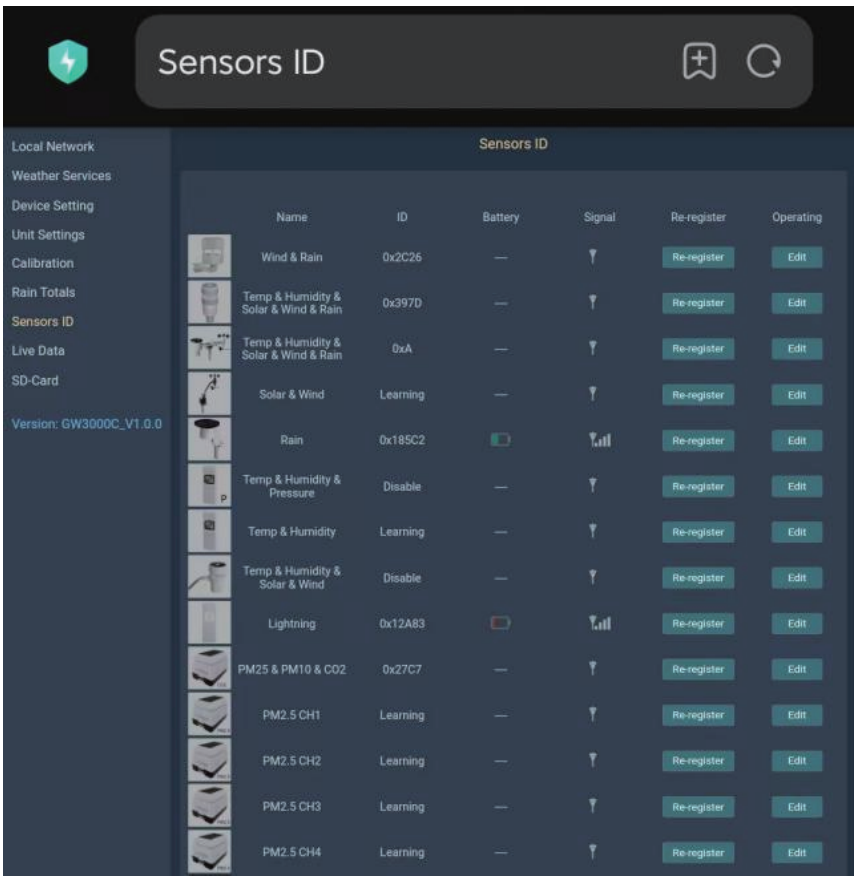


Figure 44

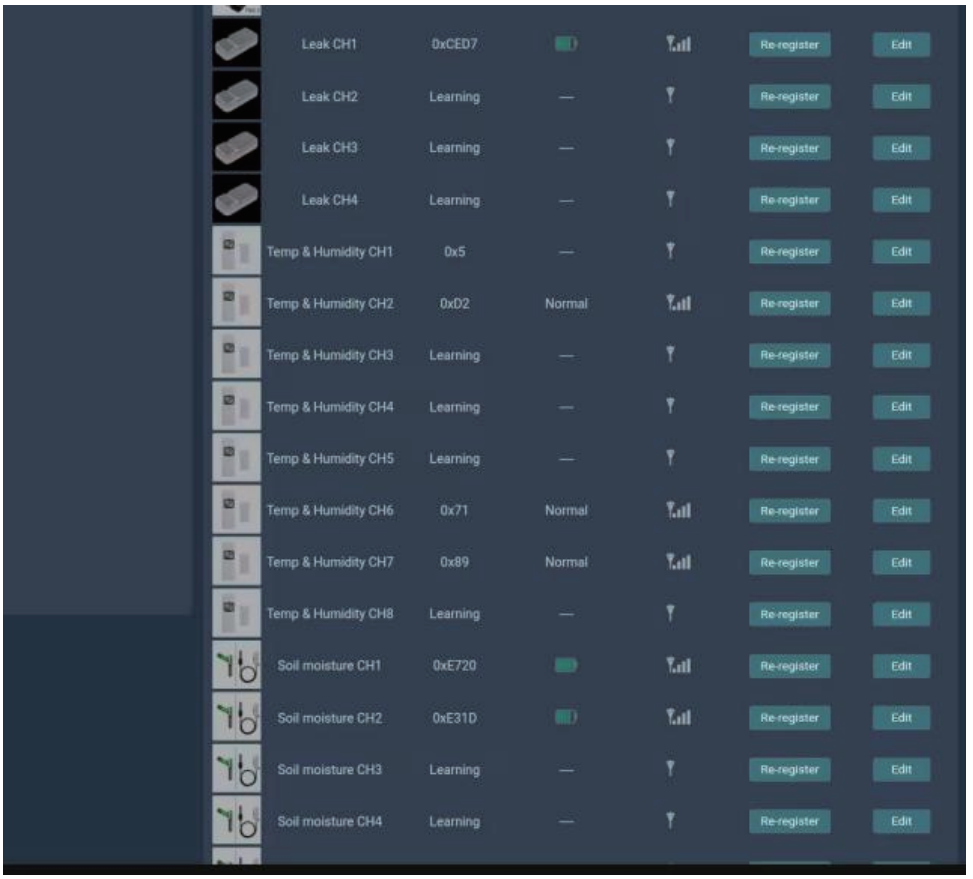

Leak CH1 0xCED7 Re-register Edit
Leak CH2 Learning — Re-register Edit
Leak CH3 Learning — Re-register Edit
Leak CH4 Learning — Re-register Edit
Temp & Humidity CH1 0x5 — Re-register Edit
Temp & Humidity CH2 0xD2 Normal Re-register Edit
Temp & Humidity CH3 Learning — Re-register Edit
Temp & Humidity CH4 Learning — Re-register Edit
Temp & Humidity CH5 Learning — Re-register Edit
Temp & Humidity CH6 0x71 Normal Re-register Edit
Temp & Humidity CH7 0x89 Normal Re-register Edit
Temp & Humidity CH8 Learning — Re-register Edit
Soil moisture CH1 0xE720 Re-register Edit
Soil moisture CH2 0xE31D Re-register Edit
Soil moisture CH3 Learning — Re-register Edit
Soil moisture CH4 Learning — Re-register Edit

Figure 45

7.9 Live Data on Web UI

1.Displays connected sensor data.
These data are real time data and changes are immediately displayed.
2.Shows the battery status of some of the connected sensors/sensor arrays.
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.

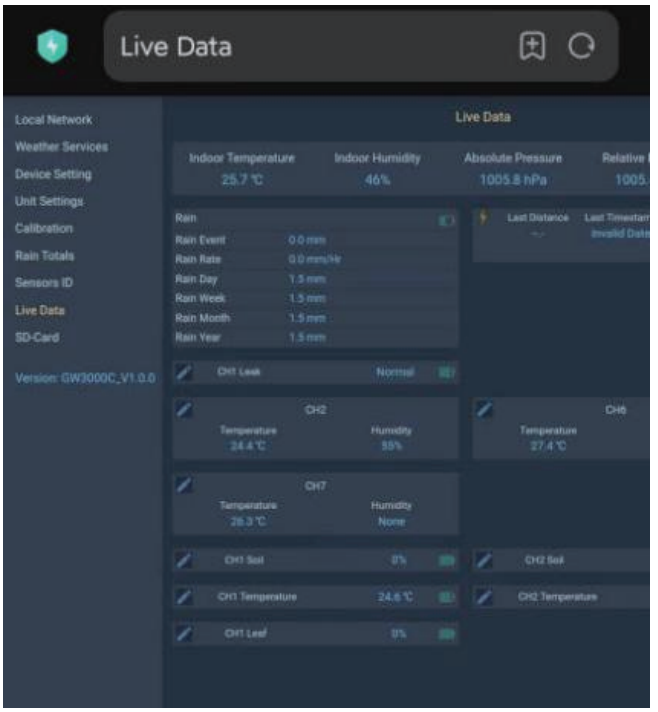


Figure 46

7.10 SD Card Management on Web UI

SD card management can only be done in the WebUI, not on the other apps.

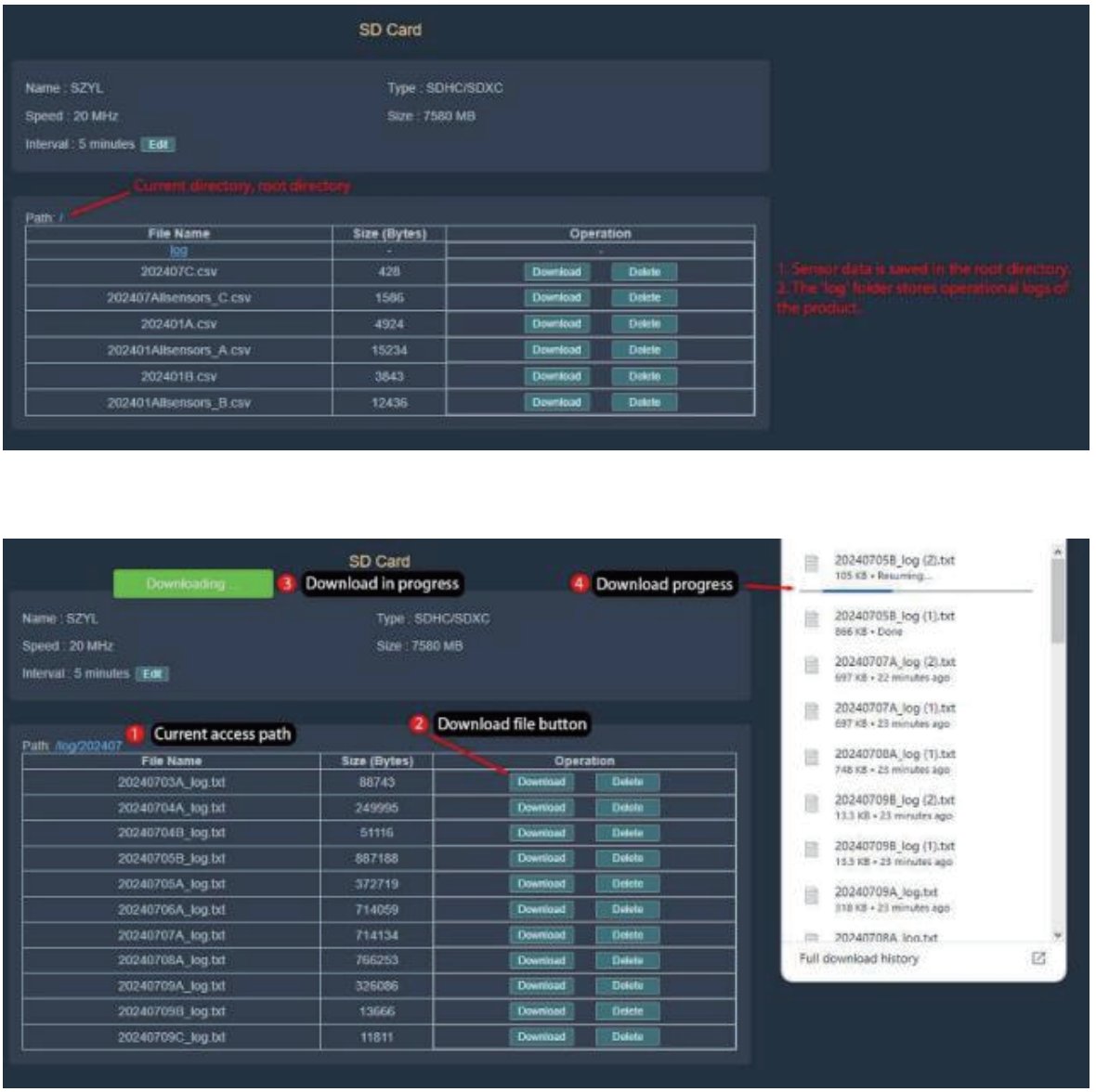
1.SD card file system format: Only FAT32 is supported. For cards larger than 32GB, use the Rufus tool to format the SD card to FAT32. Download the tool from https://rufus.ie/en/. Tip: When replacing it with a higher-capacity card, please be mindful of the memory card's maximum read/write cycles and lifespan.

2.Real-time status display and hot-swap support: The system monitors the SD card's status in real time and allows for its insertion or removal without restarting the device.

3.SD card information display: The interface shows detailed SD card information, including storage capacity and read/write frequency.

4.Multi-level directory management: The system adopts a multi-level directory structure for easy file categorization and management by users.

5.Sensor data storage: Data collected by sensors is saved in .csv format in the root directory of the SD card, facilitating direct access and analysis of data.


SD Card
Name : SZYL
Type : SDHC/SDXC
Speed : 20 MHz
Size : 7580 MB
Interval : 5 minutes
Edit
Current directory, root directory
Path: /
File Name
Size (Bytes)
Operation
log
202407C.csv
428
202407Allsensors_C.csv
1586
202401A.csv
4924
202401Allsensors_A.csv
15234
202401B.csv
3843
202401Allsensors_B.csv
12436
Download
Delete
1. Sensor data is saved in the root directory.
2. The 'log' folder stores operational logs of the product.

SD Card
Downloading...
3 Download in progress
4 Download progress
Name : SZYL
Type : SDHC/SDXC
Speed : 20 MHz
Size : 7580 MB
Interval : 5 minutes
Edit
1 Current access path
2 Download file button
Path: /log/202407
File Name
Size (Bytes)
Operation
20240703A_log.txt
88743
20240704A_log.txt
249995
20240704B_log.txt
51116
20240705B_log.txt
887188
20240705A_log.txt
372719
20240706A_log.txt
714059
20240707A_log.txt
714134
20240708A_log.txt
766253
20240709A_log.txt
326086
20240709B_log.txt
13666
20240709C_log.txt
11811
Download
Delete
20240705B_log (2).txt
105 KB • Resuming...
20240705B_log (1).txt
866 KB • Done
20240707A_log (2).txt
697 KB • 22 minutes ago
20240707A_log (1).txt
697 KB • 23 minutes ago
20240708A_log (1).txt
748 KB • 23 minutes ago
20240709B_log (2).txt
13.3 KB • 23 minutes ago
20240709B_log (1).txt
13.3 KB • 23 minutes ago
20240709A_log.txt
318 KB • 23 minutes ago
Full download history

Figure 47

8. Historical Data Export and Clear

8.1 Export History Data from ecowitt.net

When the Wi-Fi configuration (refer to 3.5 for Wi-Fi Configuration) 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 48 Export History Data

Note:

Data with a query period of days/24 hours is retained for 3 months.

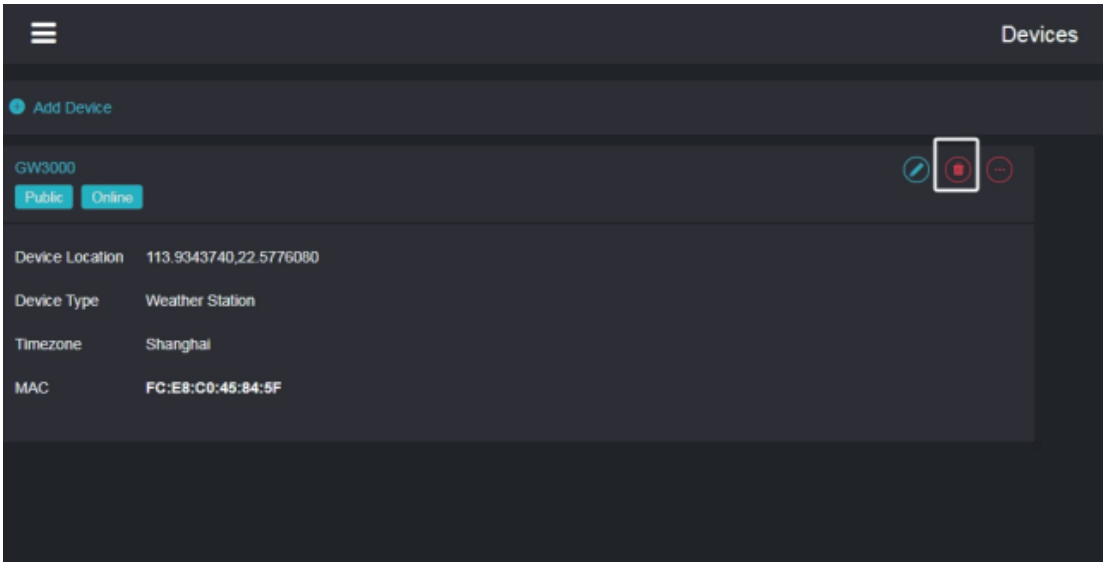
Data with a weekly query period is retained for 1 year.

Data with a monthly query period is retained for 2 years.

Data with a yearly query period is retained for 4 years.

8.2 Clear History Data

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



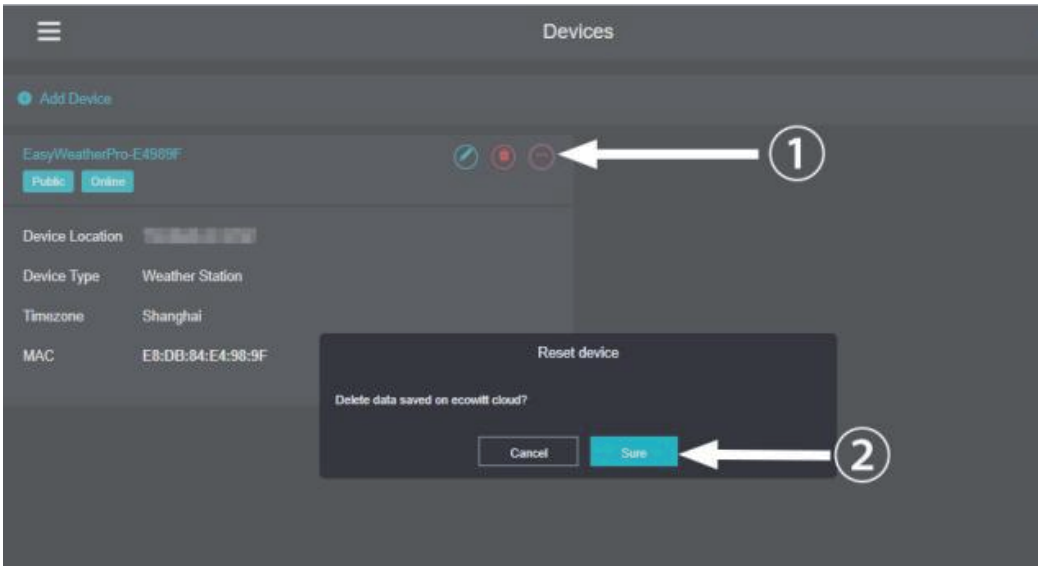


Figure 49 Clear History Data

8.3 Export historical data from the SD card

For the export of historical data from the SD card, see chapter 7.10

9. Optional Weather Servers

9.1 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

9.2 Upload weather data to Weather Servers on Ecowitt app

(1)Ensure that the mobile phone and GW3010 are using the same Wi-Fi.

(2)Ecowitt App - "…" at the top right corner - "Others" - " DIY Upload Servers"

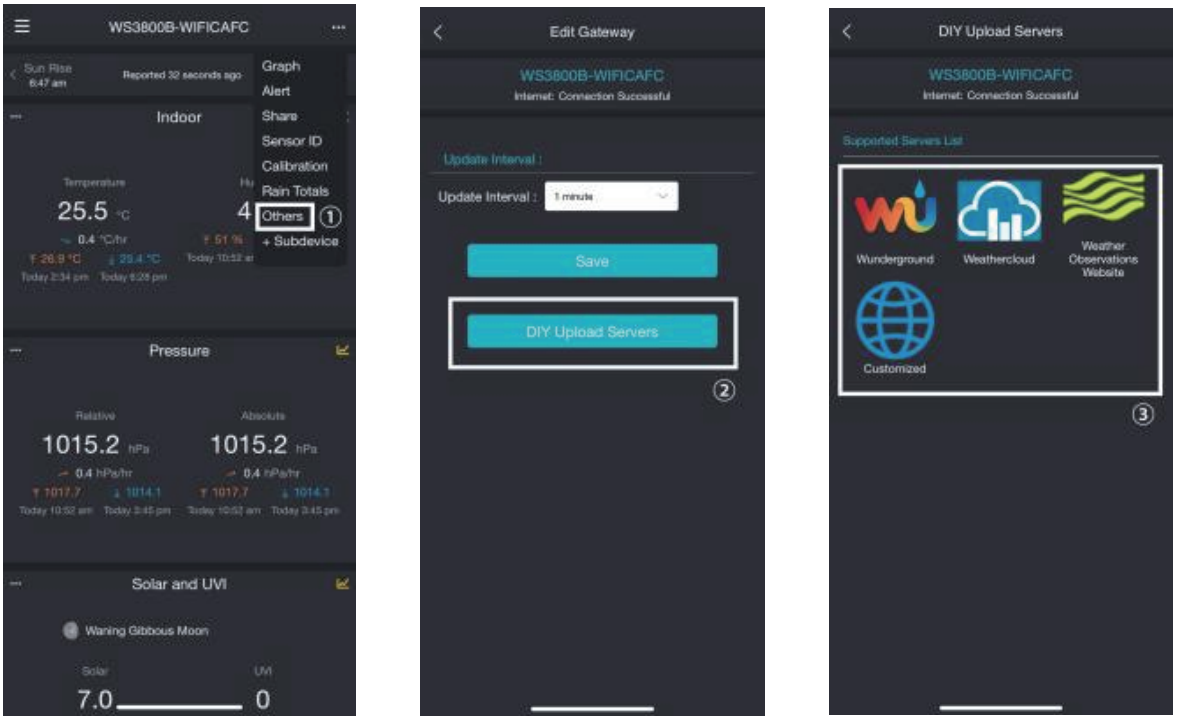


Figure 50 Upload Data to Server

9.3 Weather Services on Web UI

After the Network 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.one Customized server of your choice

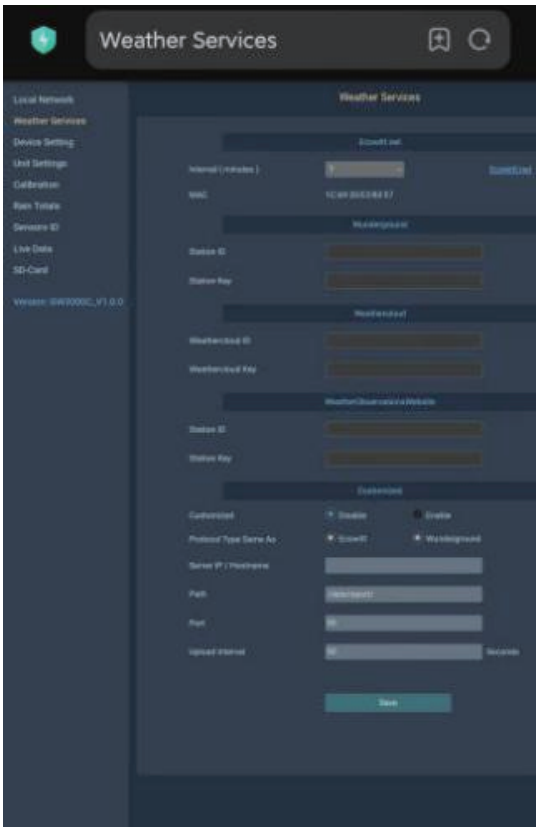


Figure 51

10. 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 Type-C power supply port, a functional indicator light, and a 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 optional sensors.)
- The gateway supports an SD card for data storage, allowing for local storage and backup. It also supports local data protocols (TCP/HTTP) for building a private system, allowing customized weather monitoring and control setups.
- 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, 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.

11. Specifications

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

Model	GW3010
Name	Wired and wireless Wi-Fi gateway with data storage function, equipped with an external Enhanced Omni-directional Antenna
Dimensions	35×24.9×62(mm)
433 MHz antenna dimensions	183×30×5(mm)
868/915 MHz antenna dimensions	110×30×7(mm)
Antenna cable length	3000(mm)
T&H Probe Dimensions	10.5×12×5.5(mm)
T&H Cable length	850(mm)
Weight	106.1(g)
Material of Plastic Casing	ABS

SD card	Micro SD Supported
Key	Reset
Indicator light	"RF", "Network", "SD Card"
Temperature Metering Range	-9.9°C to 60°C (14°F to 140°F)
Temperature Metering Accuracy	±1°C(±1.8 ℉)
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 Resolution	1%RH
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	433MHz（long version）
	868/915MHz（short version）
RF Wireless Range	Over 220 m (for sensors like WH51 that are positioned closer to the ground) Over 350 m (for weather sensors like WS90)

WLAN	802.11 b/g/n 2.4 GHz (802.11n, Max 150 Mbps)
WLAN Range	Over 30 meters (in open areas)
Gateway Operating Temperature	-10°C to 60°C (14°F to 140°F)
Power Supply	5V 1A USB to Type-C

Table 4 GW3010 Specification

12. 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, your 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 during the pairing process.
- Turn off your mobile data/ cellular data until the pairing is successfully completed.
- 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 GW3010 -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.

If you can connect your gateway via LAN cable to the router, use this approach as it will be less prone to disturbances of all kinds.

⑤ Should I check the box for "Automatic Firmware Upgrade"?

- If an upgrade is available in the future, you can check the Device Settings 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.

- 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 (capacitor) 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'/100m. 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 after purchase)
- LCD font is missing/light and dark scratch. (warranty within 2 years after purchase.)
- Abnormal key function. (warranty within 2 years after purchase.)

13. 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.

13.1 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/Sensor:
Outdoor temperature priority: WN32>
WS90>WS80>WS68>WS69.
Piezo rainfall priority: WS85>WS90
Traditional rainfall Priority: WH40>WS69
Solar: WS90>WS80>WS68>WS69.

13.2 Optional Sensors

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 console (the frequency is different for various countries because of regulations).

Notes:
The max Quantity in the following table indicates the maximum number of the same sensor model or type that can be connected to one 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	Quantity of available per gateway	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	Quantity of available per gateway	Picture	Functions
WFC01	16*		Smart water timer
WFC02			Smart water timer
AC1100			Smart plug

Table 6 IoT Device

*) Combined fields mean that the maximum number is composed of the 2-3 options together.

14. Warranty & Caution

14.1 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.

14.2 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 Town, Baoan District, Shenzhen City, China

15. Contact Us

15.1 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.

15.2 Stay in Touch

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