Wi-Fi Weather Station Gateway with Temperature, Humidity and Barometric Sensor

Operation Manual
Model: GW1100

Thank you for purchasing this GW1100 Wi-Fi Weather Station Gateway, with built-in temperature, humidity and barometric sensor. It can also handle all the Ecowitt sensors developed. By upgrading firmware, future sensors developed can also be hosted, and this made the gateway an extremely flexible Ecowitt ecosystem possible.

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

Table of Contents

1 Unpacking

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

QTY	Item Description
1	USB Wi-Fi Gateway
1	USB extension cable for powering the gateway
1	Cable clip
1	User manual (this manual)

Table 1: Package content

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

Note: The gateway must be plugged into a USB (2.0 or later) port for its power supply. The USB extension cable (USB type A - Male straight to

female straight; included) should be used so that the gateway is sitting further from AC adapters which is a heat source as well as EMI interference source. The using of this USB extension cable will make the gateway performs better in terms of radio signal reception, and measures indoor temperature, humidity more accurate.

Note: You may download the online PDF version manual of this product for better reading experience:

1. Go to our website: www.ecowitt.com
2. Go to “Support” and click “Manual & Firmware”
3. Search for “GW1100”
4. Download the manual

2 Overview

2.1 Wi-Fi Gateway

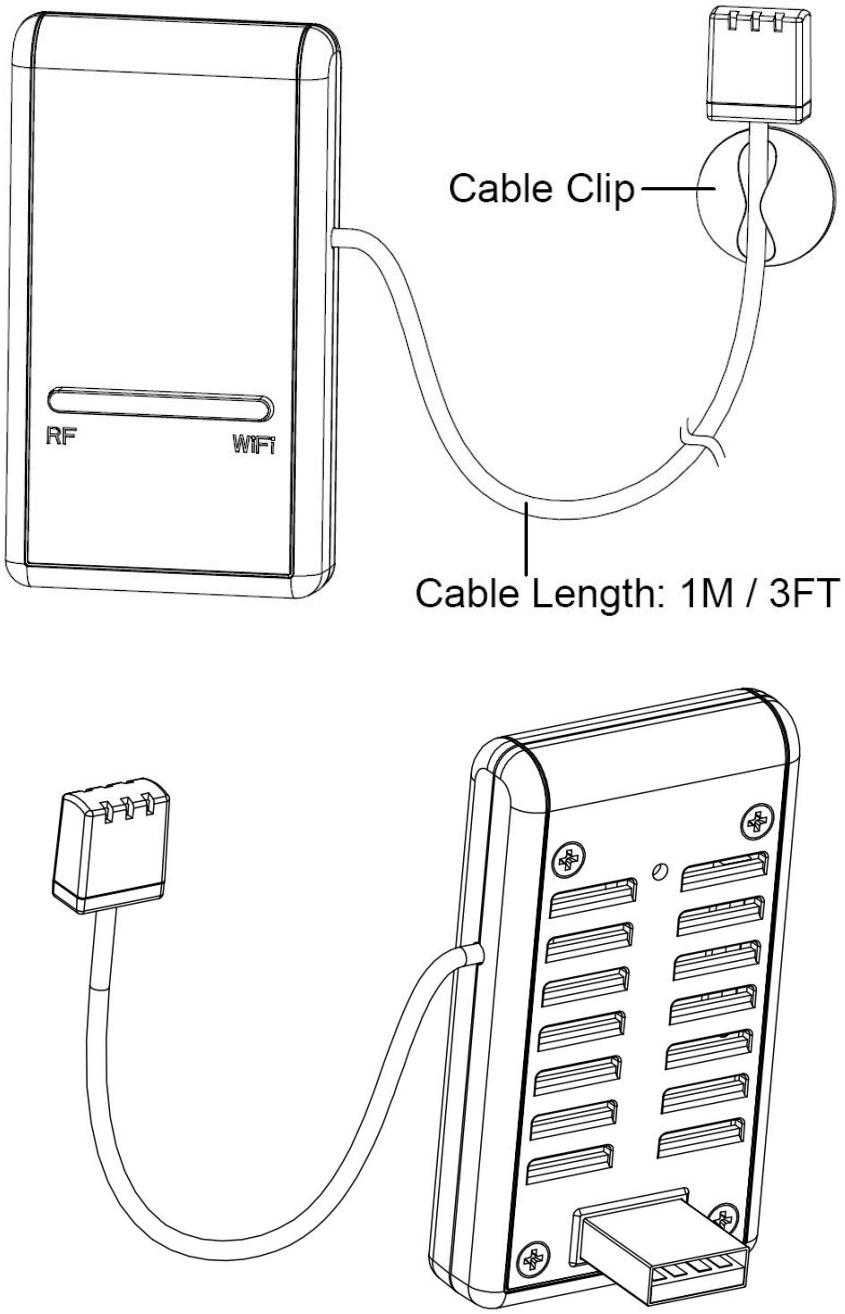


Figure 1: Wi-Fi Gateway

2.2 Features

- Attached temperature, humidity and atmospheric pressure 3-in-1 probe sensor.
- Collects sensor data from various supported wireless sensors.
- Additional/optional sensors:
  - One WH32 outdoor temperature and humidity sensor
  - One WH40 self-emptying rain gauge sensor
  - One WS68 wireless anemometer
  - Up to 8 WH31 multi-channel temperature and humidity sensors or 8 WN30 multi-channel temp sensors
  - Up to 8 WH51 soil moisture sensors
  - Up to 4 WH41/WH43 PM2.5 air quality sensors

    - One WH45 PM2.5/PM10/CO2/temperature and humidity all-in-1 sensor
    - Up to 4 WH55 Water leak sensors
    - One WH57 Lightning sensor
    - Up to 8 WN34 Temp Sensors
    - Up to 8 WN35 leaf wetness sensors
- Calculates dew point for outdoor sensor (cloud upload supported)
- Pushes sensor data to cloud weather services:
    - https://www.ecowitt.net
    - https://www.wunderground.com
    - https://www.weathercloud.com/
    - https://www.wow.com
- Custom sites using either Wunderground or Ecowitt protocol. Contact the Customer Support department for assistance.

- Mobile application (WS View)
  - View collected live data.
  - Manage sensor calibration setup.
  - Manage sensor selection.
- Data storage service on Ecowitt server: https://ecowitt.net
  - Data storing resolution:
    - by day: 5 minutes average
    - by week: 30 minutes average
    - by month: 4 hours average
    - by year: 1 day average
  - Stores data for past three months with 5-minute intervals
  - Stores data for past one year at 30-minute intervals

- Stores data for past two year at 4-hour intervals

Note: All the optional sensors supported can be found on our website: www.ecowitt.com. Make sure to select the model of the units with the same RF frequency as your gateway (the frequency is different for various countries because of regulations).

Note: www.ecowitt.net hosts all the sensor supported, however, it is not necessary true to other data hosting services. For example, the Wunderground only accepts outdoor sensor data, therefore it will not display the following sensor data on their website:

- Indoor temperature and humidity (from the GW1100 built-in 3-in-1 sensor)

- Multi-channel temperature and humidity (from the WH31 sensor) or Multi-channel temp (from WN30 sensor)
- Soil moisture (from the WH51 sensor)
- PM2.5 data (from the WH41/43 sensor).
- Lightning data (from the WH57 sensor)
- Water leakage condition (from the WH55 Sensor)
- Water/Soil temp (from WN34 sensor)
- PM2.5/PM10/CO2/temperature and humidity data (from the WH45 Sensor)
- Leaf wetness sensor(from WN35 sensor)

To view and record all the sensors data remotely, we recommend you to use the Ecowitt server.

Attention:

Our product is continuously changing and improving, particularly online services and associated applications. To download the latest manual and additional help, please contact us at support@ecowitt.com or support.eu@ecowitt.net (EU/UK).

3 Set up Guide

3.1 Wi-Fi Gateway Introduction

See Figure 2 to help you identify elements of the gateway.

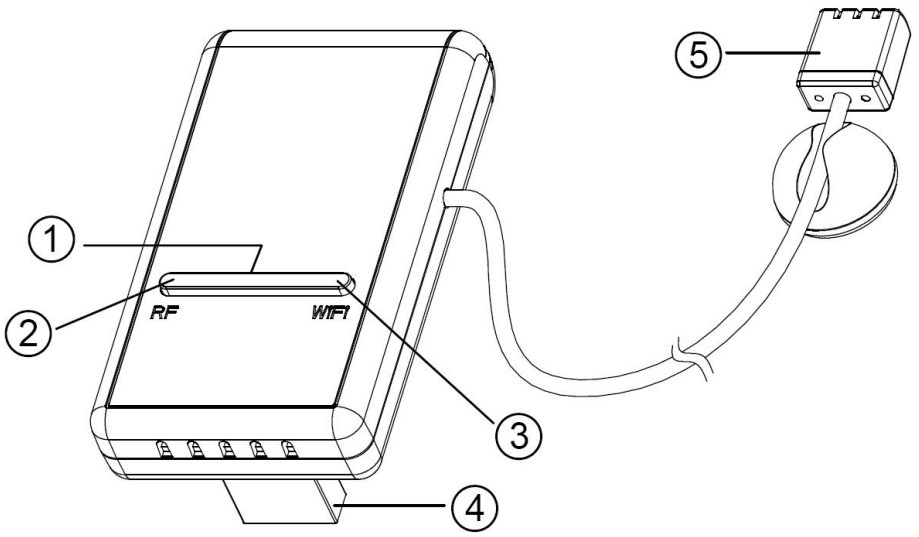


Figure 2: Gateway Introduction

1. Factory Default Reset Button
2. RF Status Indicator Light (Blue)
3. Wi-Fi Status Indicator Light (Red)
4. USB Connector for system power supply
5. Temperature, humidity and barometric 3-in-1 sensor

Table 2: Gateway parts identification

3.1.1 LED Indicators

RF (Blue): Indicates the status of RF communication with the station.

- **Flash** (each): Indicates one packet of RF data from a sensor was received.
- **Off** (steady): Indicates none RF data received.

Wi-Fi (Red): Indicates the status of the Wi-Fi connection.

- **Off :** Wi-Fi connection to router failed;
- **On:** GW1100 was provisioned to router and has data sent to any one of the cloud data hosting successfully.
- **Flash slowly:** GW1100 connected to WiFi router, but failed to publish data to any of the weather service on cloud.
- **Flash rapidly:** GW1100 was in factory reset default state. It has never been configured for router and weather server.

3.1.2 Button functions

The black button is used for the reset mode:

Reset Mode: Hold the black button for about 5 seconds will reset the gateway to factory default reset state. All the history data, Wi-Fi settings, calibration and sensor labeling etc. are all lost and need to be set again.

4 Publish to Internet Weather Services

The supported services are shown in the below table.

Service	Description
Weather Underground	Site: https://wunderground.com provides local & long-range weather forecasts, weather reports, maps & tropical weather conditions for locations worldwide.
WOW	Site: https://wow.metoffice.gov.uk A UK based weather observation website.
Weather Cloud	Site: https://weathercloud.net A large network of weather stations reporting data in real time from all over the world.
Ecowitt Weather	Site: https://www.ecowitt.net Ecowitt's new weather server that can host a bunch of sensors that other services don't support at this time.

Table 3: Supported weather services

4.1 Gateway Wi-Fi Configuration

1. Power up device.

2. Go to your computer's or phone's Network Settings page, find GW1100 AP in Network Settings page or WLAN page.

Figure 3: Configure screen 1

3. Connect the AP, but please note you may wait about 60 seconds to connect this device, it may pops up a prompt ‘This WLAN network has no Internet access. Connect anyway? CANCEL | CONNECT’, see Figure 4, choose CONNECT always.

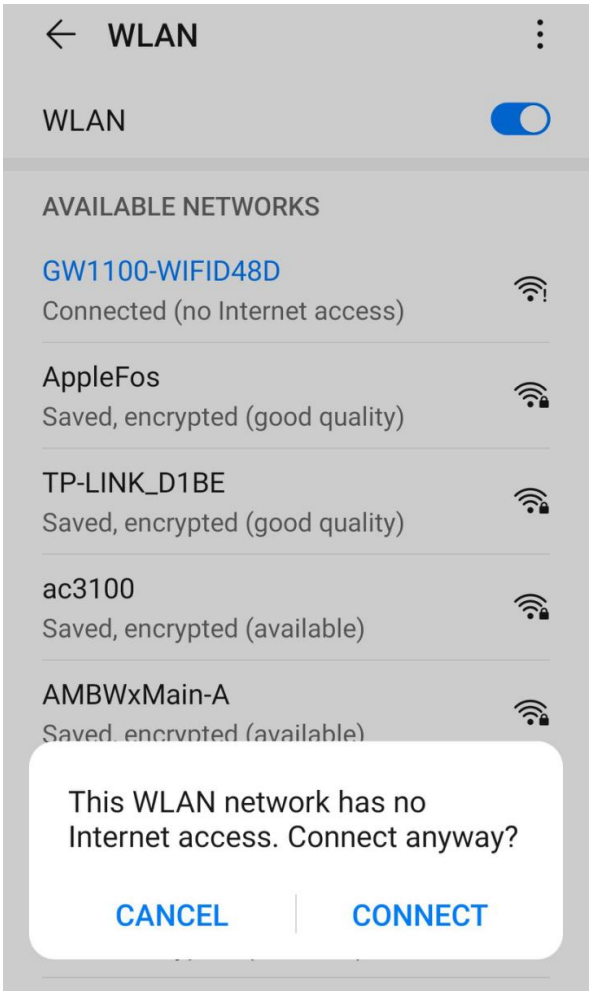


Figure 4: Configure screen 2

4. After connected to the AP successfully, you can see the networked state is connected. If needed(to prevent automatically switching to mobile network for some user's case), the mobile network service should be turned off.

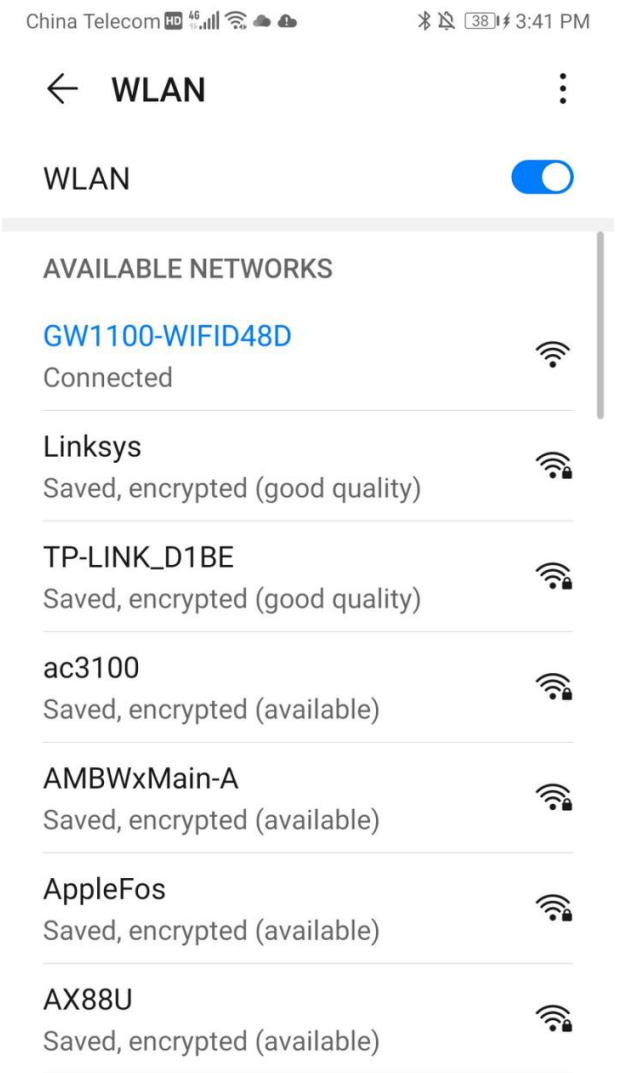


Figure 5: Configure screen 3 (show on phone)

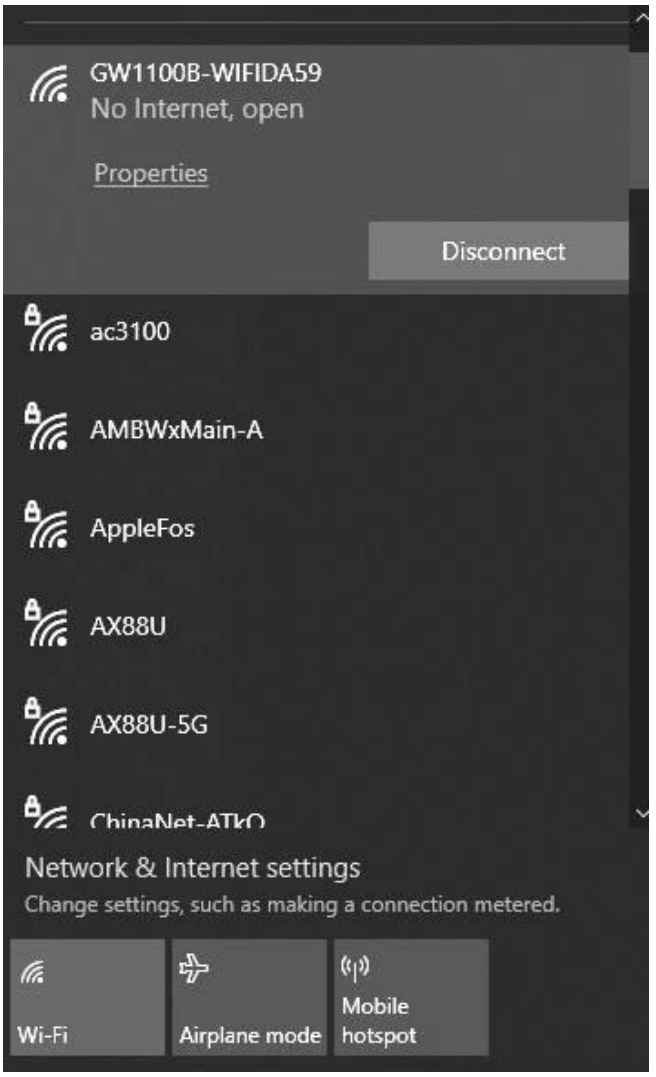


Figure 6: Configure screen 4 (show on computer)

5. Open your browser, type 192.168.4.1 in the browser address search bar and enter.

Figure 7: Configure screen 5

6. See Figure 8 to login directly, do not enter password.

Figure 8: Configure screen 6

7. Open Local Network page (Figure 9), enter your Router SSID and Password and press “Apply” button to save the setting.
To tell if your setting for router is succeeded, the IP address label will be updated with its newly assigned IP address, which usually is 192.168.2.110 or alike. Make a note for this IP address and the MAC address displayed on this page for later use. So now there are two ways to open the device embed web page:

Phone directly connects to GW1100 AP , then the fixed IP address of (192.168.4.1) should be used.

If GW1100 has been configured and connected to the WiFi network, and your phone is on the same WLAN network, type in the IP address marked above can open the GW1100 embed web page.

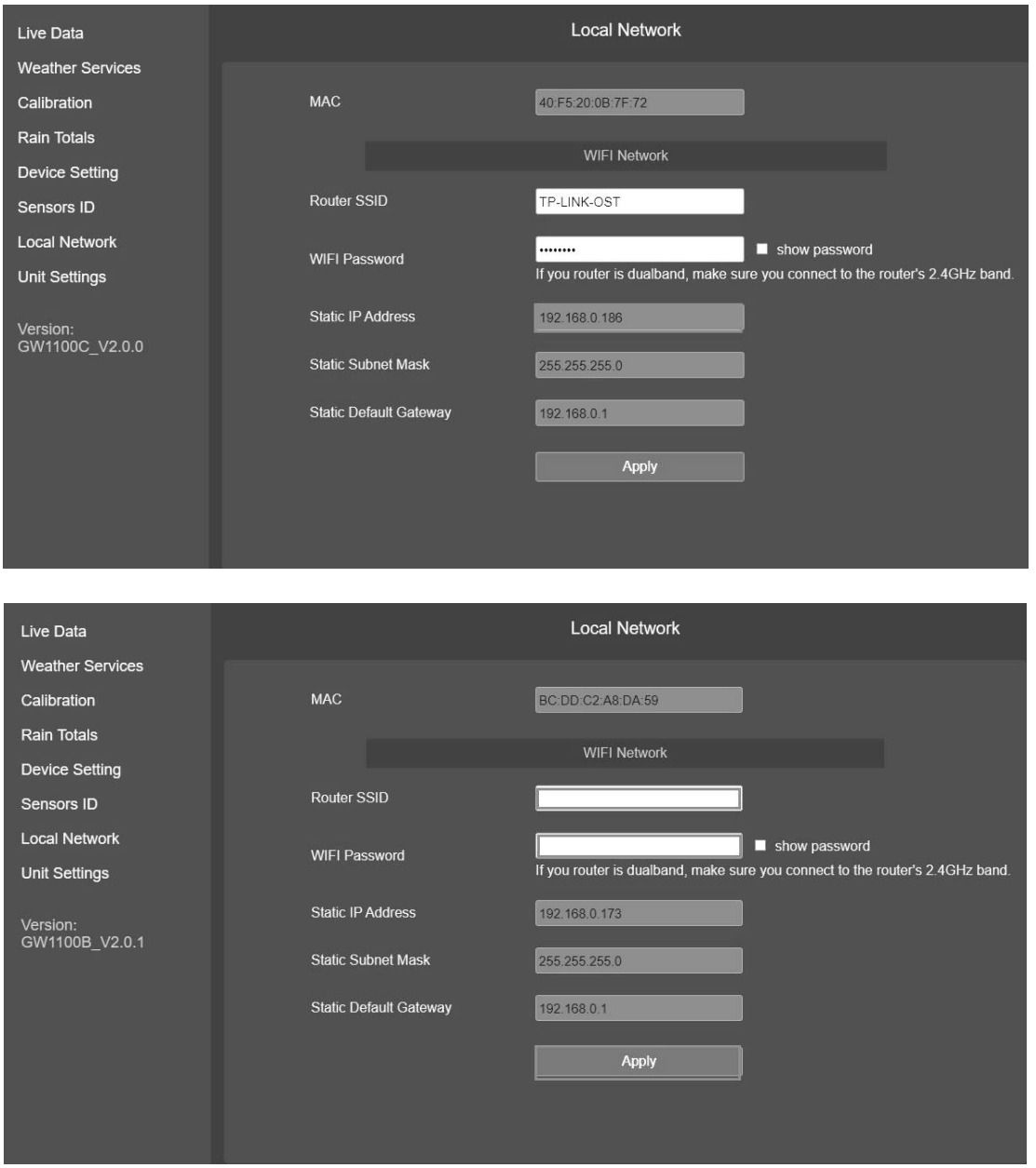


Figure 9: Configure screen 7

8. Go to Live Data page, then you can see the Live Data of device. On this page, you

can find which sensor is being connected currently.

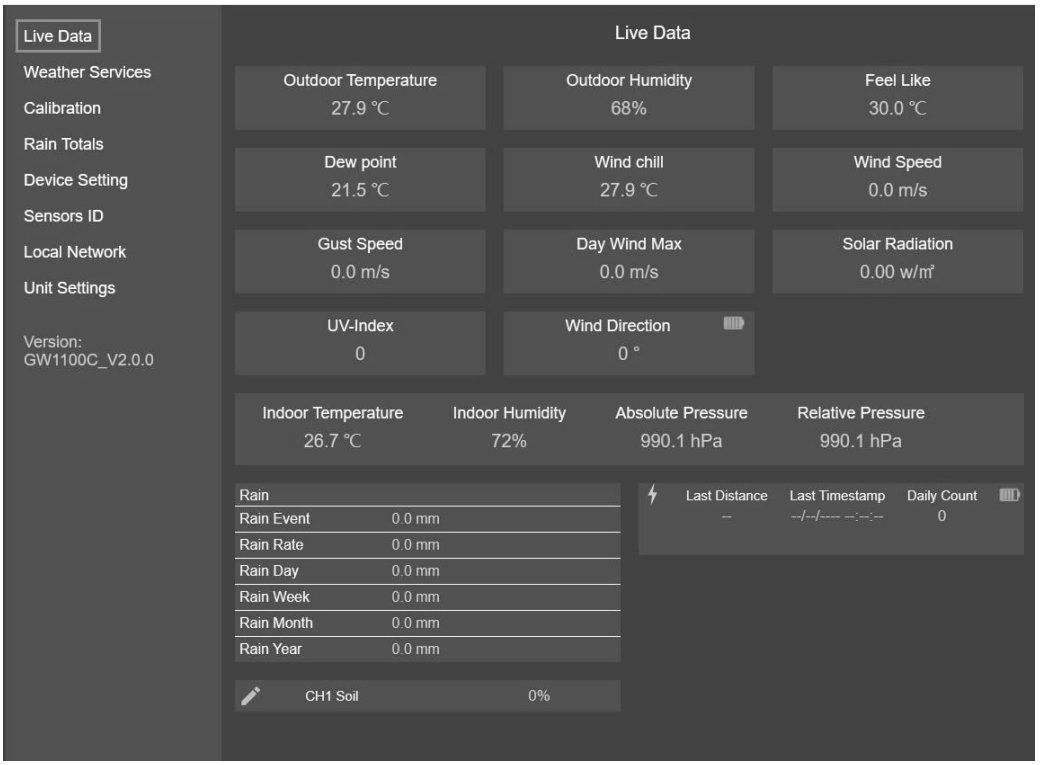
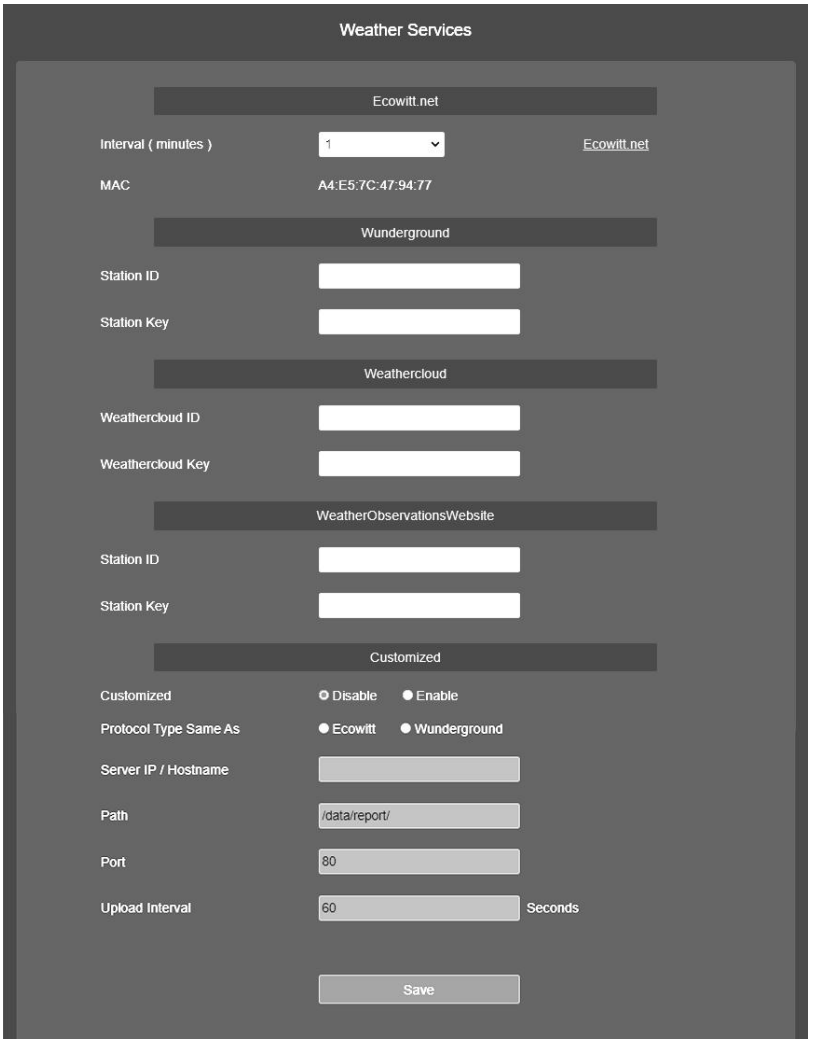


Figure 10: Configure screen 8

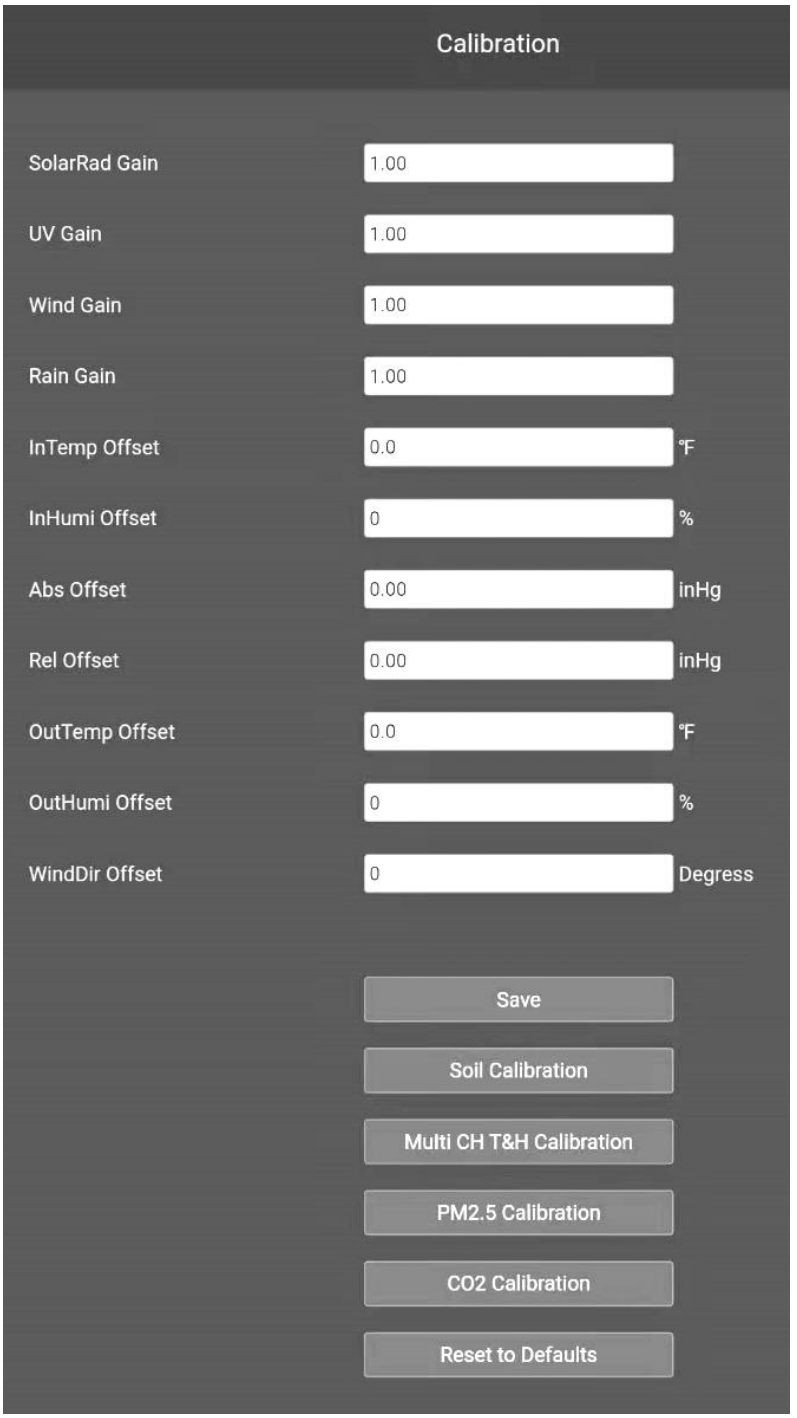
9. Other setting functions on left menu bar

Weather Services: if you want upload data to the weather services, select Weather Services from the menu on the left, enter Station ID and Key, then click Save.

Note: Before this step, you may go to weather services official web page to register account to obtain your device's Station ID & Key.

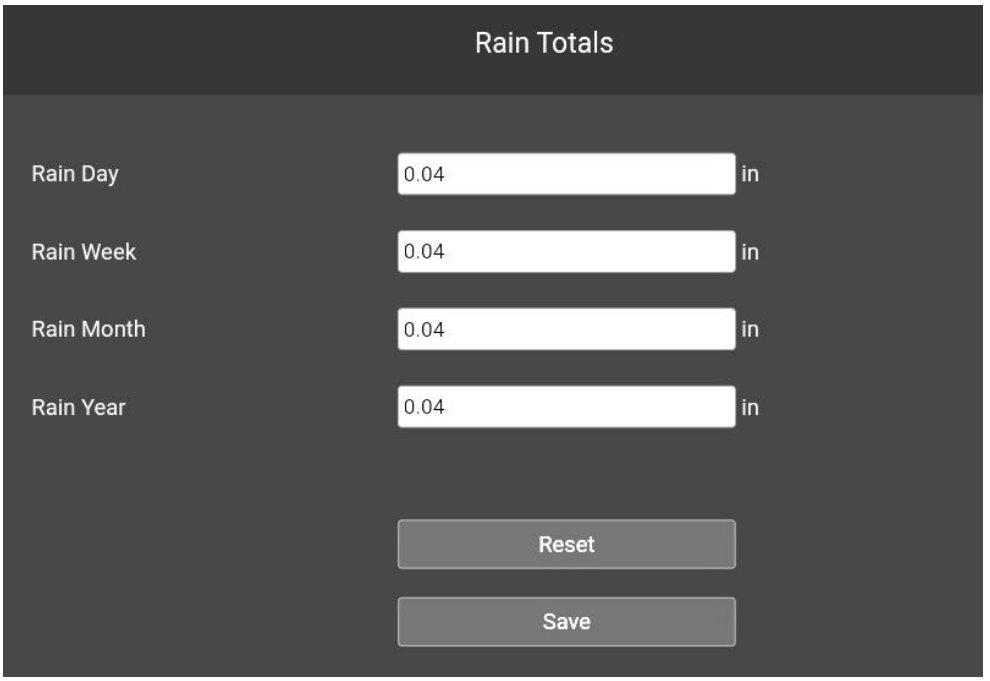


Calibration: If you need to calibrate the parameters, select Calibration from the menu bar on the left.



Rain Initial Value:

If you need to set the Rain for current year, month, week starting values, select Rain Totals from the menu bar on the left. You can edit the rain total for the current day, week, month, or year. 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.



Device Setting: you can select sensor type to match your sensor on hand. If the sensor you have is same as the one showed here, you should check this option so that gateway GW1100 can interpretate correct rain and wind speed data from the sensor.

Auto Time Zone: if you have set up your account on www.ecowitt.net for your time zone , then the gateway will synchronize the time zone setting automatically with this setting turned on. If not, then you should set the time zone manually as listed below.

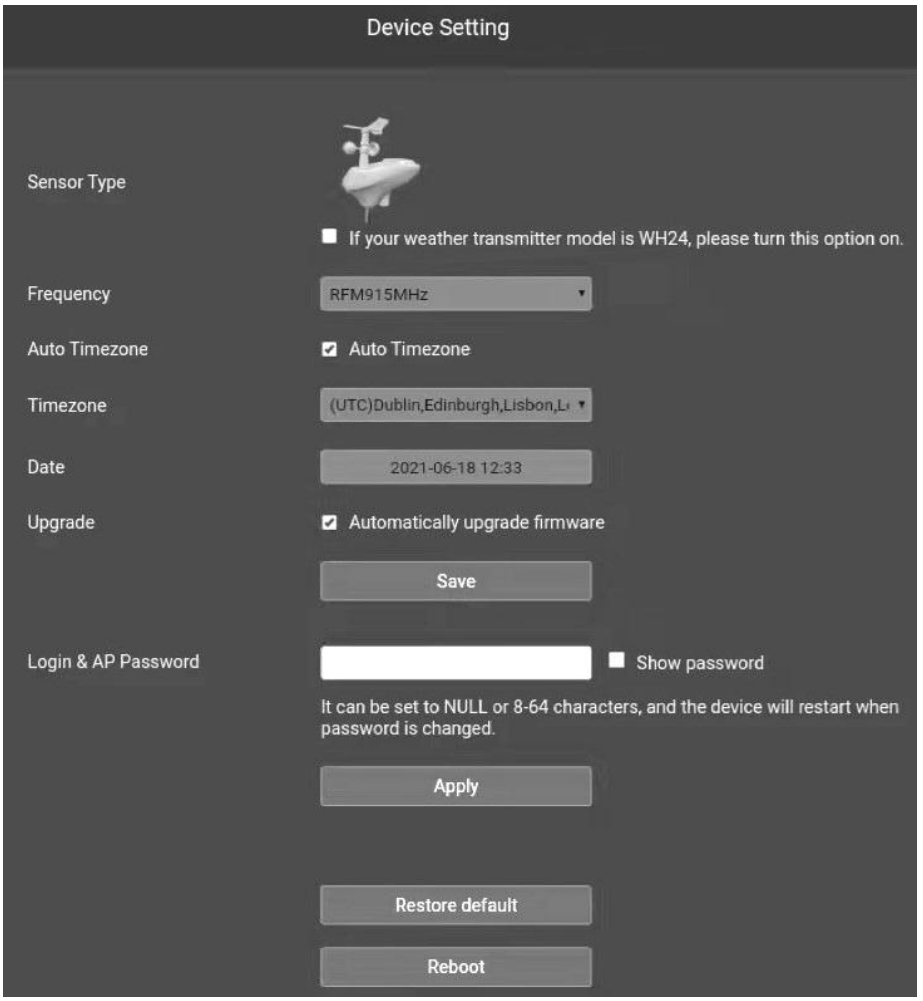
Time zone and Date is important for rain calculation as the correct time and date is obtained.

Upgrade : Automatically Upgrade Firmware

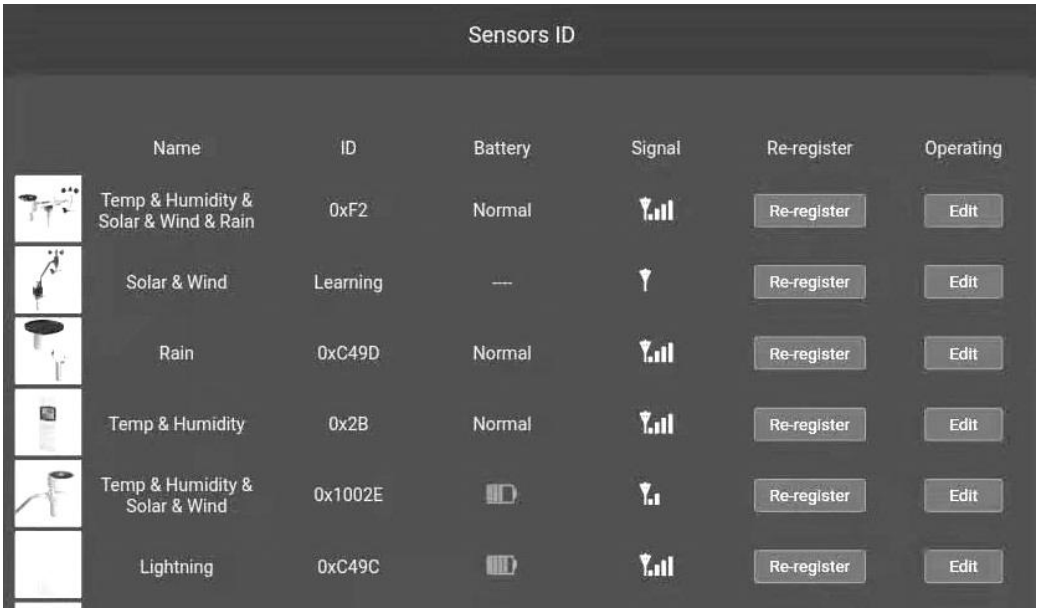
This option is unchecked as a default setting, which means the device will not upgrade firmware by itself. If this option is enabled, then GW1100 will upgrade firmware automatically (precondition: gateway GW1100 connected to your router with internet access from the network)

Login & AP Password: If a password is set, then the same password will be applied for connecting the AP as well as the login password.

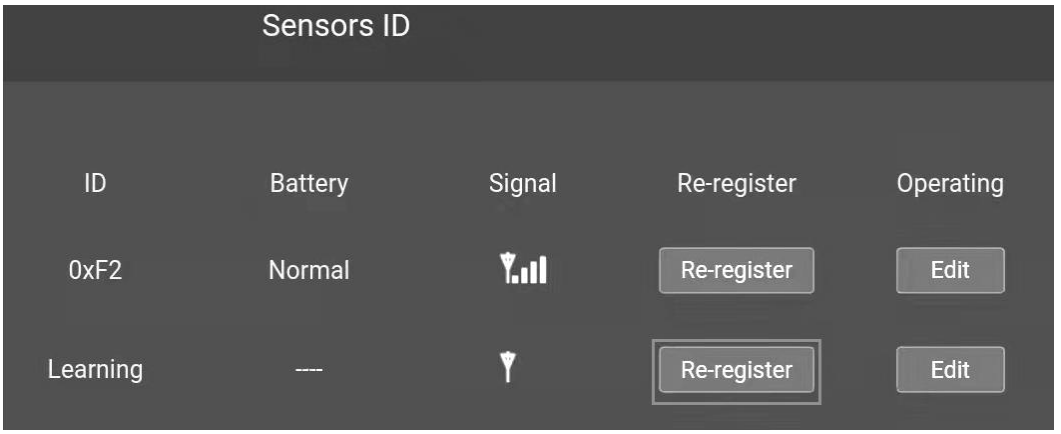
Restore Default: it will erase all the settings for router setuo, password and calibration.


Device Setting
Sensor Type
If your weather transmitter model is WH24, please turn this option on.
Frequency
RFM915MHz
Auto Timezone
Auto Timezone
Timezone
(UTC)Dublin,Edinburgh,Lisbon,L
Date
2021-06-18 12:33
Upgrade
Automatically upgrade firmware
Save
Login & AP Password
Show password
It can be set to NULL or 8-64 characters, and the device will restart when password is changed.
Apply
Restore default
Reboot

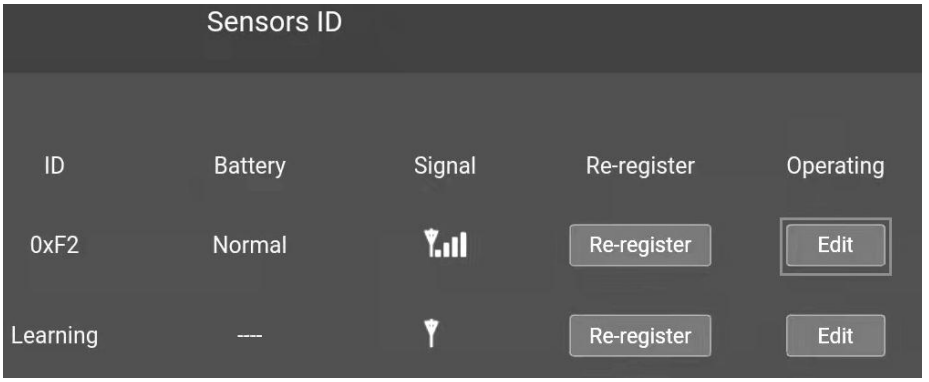
Sensors ID: manage your sensors from here.

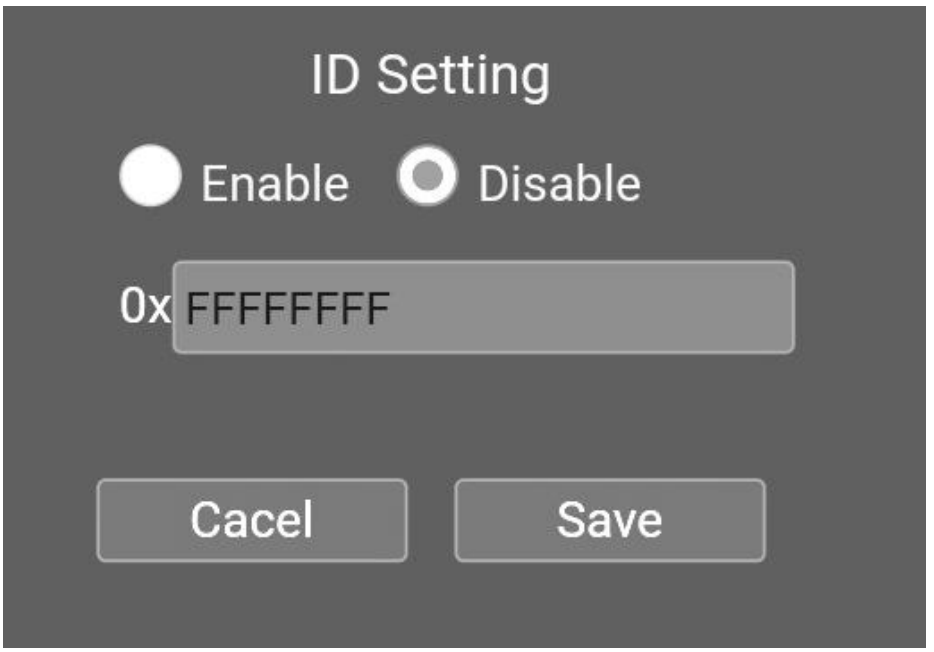


- Register (Learning): click Re-register to force gateway to search sensors manually.

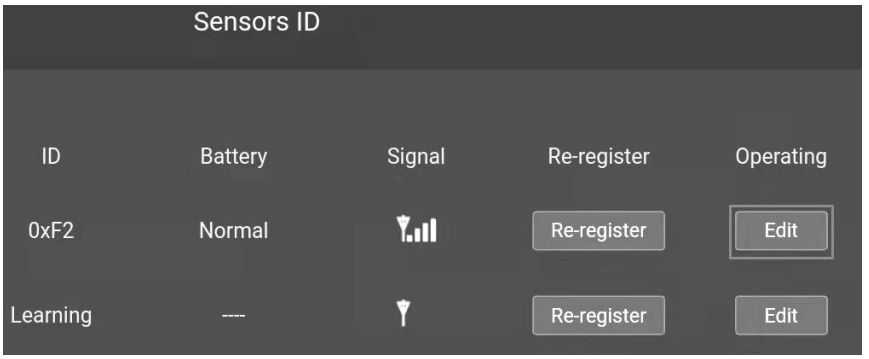


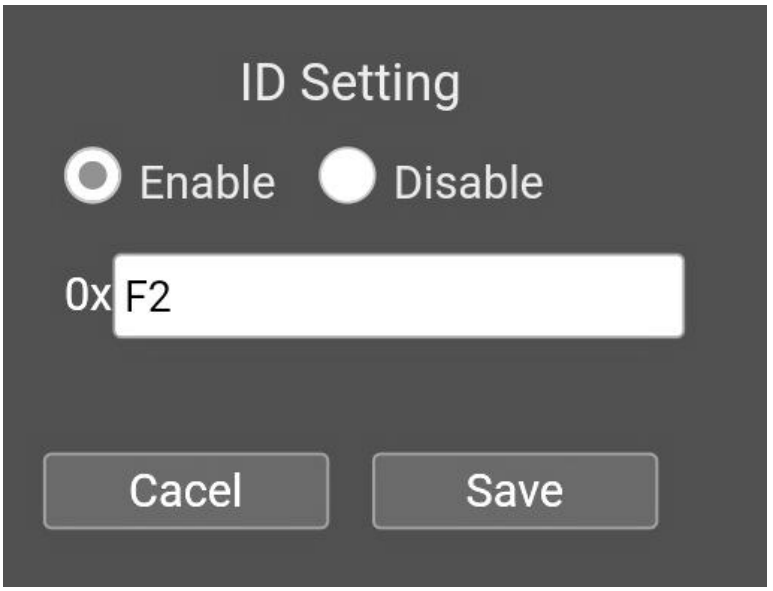
- Disable (Stop): if device receives unwanted sensor data , you may tell GW1100 to refuse receiving this sensor type permanently.



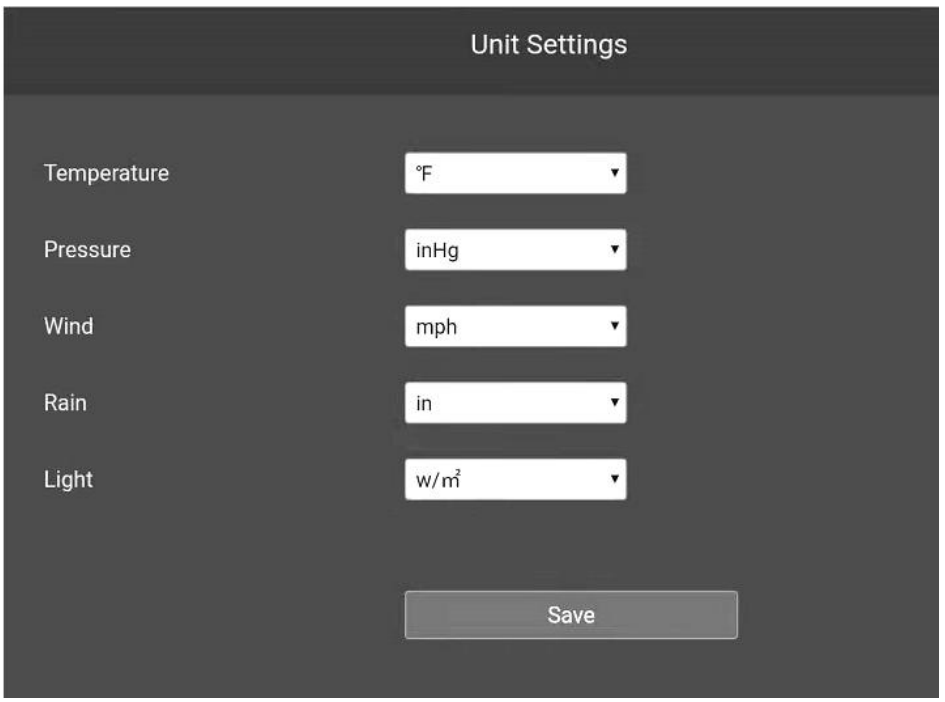


Searching for Sensors with assigned ID: you can force GW1100 to search for a particular sensor by a known ID: enter the sensor ID manually on ID setting page and Press “save” button will apply this function.





Unit Settings： click Unit Settings from the menu bar on the left, select the units you want.

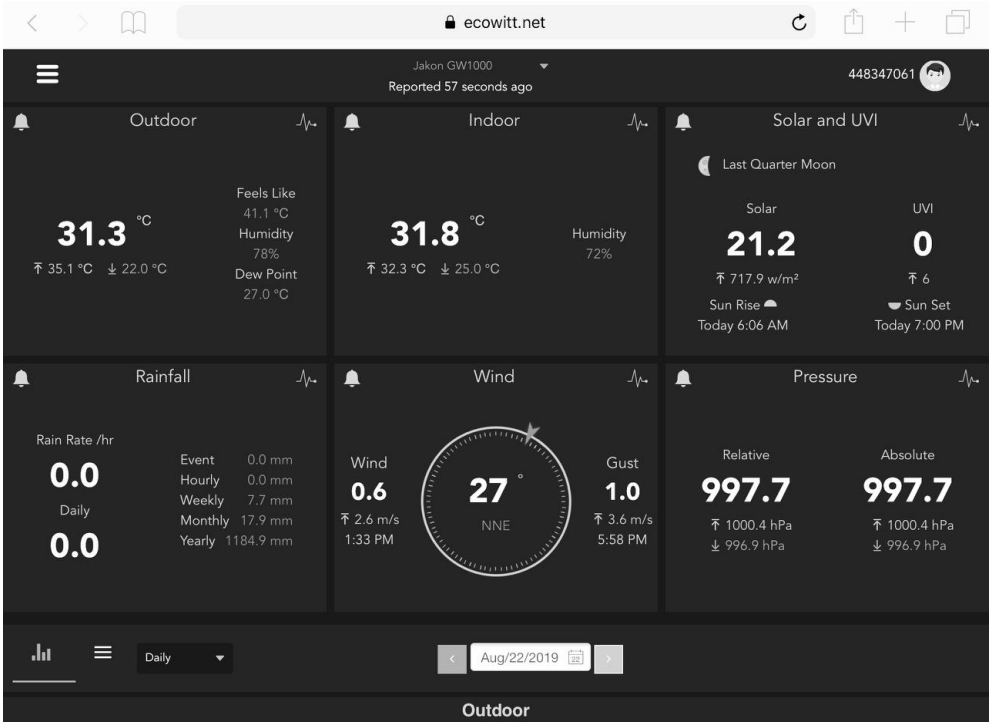


5 Register weather services account and viewing data on weather services website

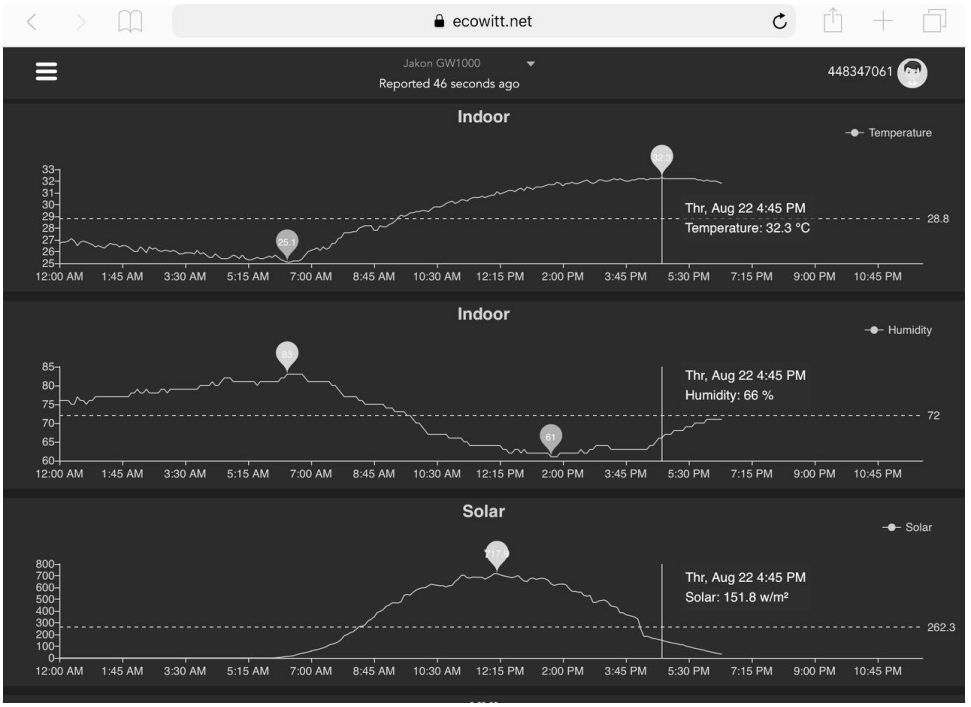
ecowitt.net

1. Register on www.ecowitt.net
2. Under your account, add your device by its MAC address, location and time zone setting.
3. Setup your GW1100 and enable to send data to this service.
4. Open dashboard for your data viewing.
5. If you want to share your station data with other users, you may use the Share option under the Menu to create a share link.
6. You can set alert condition and when the alert is triggerred, an email will be sent to your registered mail address.

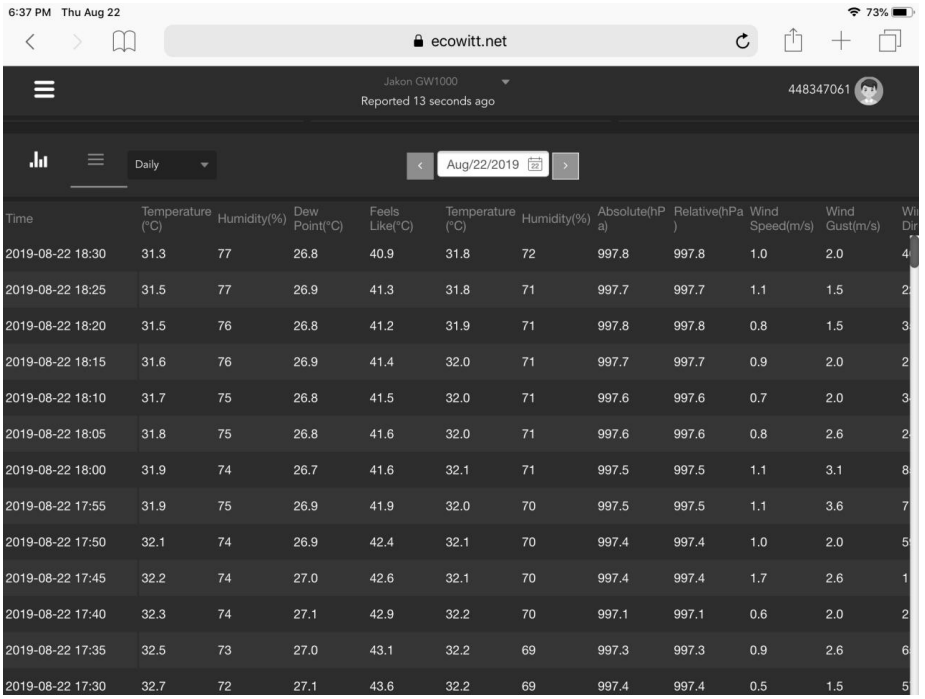
Dashboard



Graph display

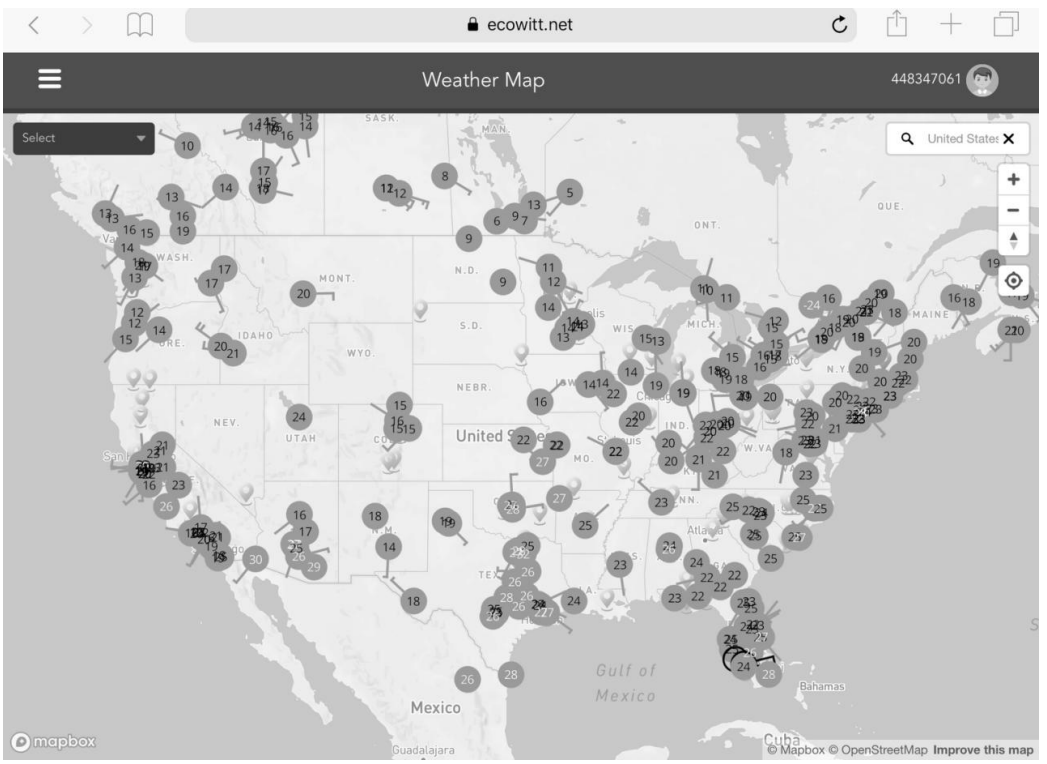


List display

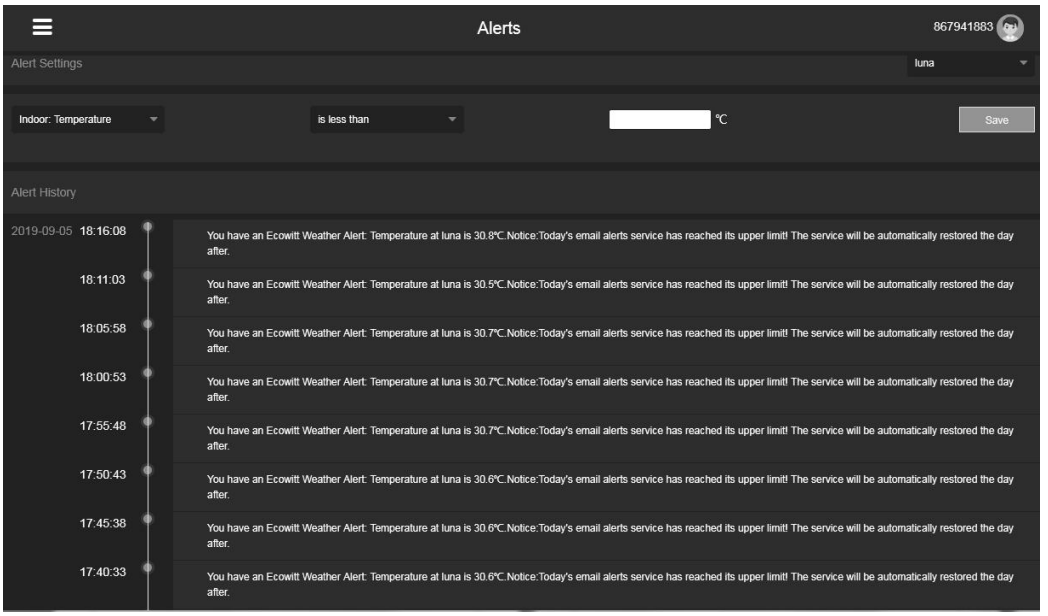


Time	Temperature (°C)	Humidity(%)	Dew Point(°C)	Feels Like(°C)	Temperature (°C)	Humidity(%)	Absolute(hPa)	Relative(hPa)	Wind Speed(m/s)	Wind Gust(m/s)	Wi Dir
2019-08-22 18:30	31.3	77	26.8	40.9	31.8	72	997.8	997.8	1.0	2.0	4
2019-08-22 18:25	31.5	77	26.9	41.3	31.8	71	997.7	997.7	1.1	1.5	2
2019-08-22 18:20	31.5	76	26.8	41.2	31.9	71	997.8	997.8	0.8	1.5	3
2019-08-22 18:15	31.6	76	26.9	41.4	32.0	71	997.7	997.7	0.9	2.0	2
2019-08-22 18:10	31.7	75	26.8	41.5	32.0	71	997.6	997.6	0.7	2.0	3
2019-08-22 18:05	31.8	75	26.8	41.6	32.0	71	997.6	997.6	0.8	2.6	2
2019-08-22 18:00	31.9	74	26.7	41.6	32.1	71	997.5	997.5	1.1	3.1	8
2019-08-22 17:55	31.9	75	26.9	41.9	32.0	70	997.5	997.5	1.1	3.6	7
2019-08-22 17:50	32.1	74	26.9	42.4	32.1	70	997.4	997.4	1.0	2.0	5
2019-08-22 17:45	32.2	74	27.0	42.6	32.1	70	997.4	997.4	1.7	2.6	1
2019-08-22 17:40	32.3	74	27.1	42.9	32.2	70	997.1	997.1	0.6	2.0	2
2019-08-22 17:35	32.5	73	27.0	43.1	32.2	69	997.3	997.3	0.9	2.6	6
2019-08-22 17:30	32.7	72	27.1	43.6	32.2	69	997.4	997.4	0.5	1.5	5

Weather Map



Email Alerts



Weather Underground

1. Register on https://wunderground.com,
2. Go to My Profile, click My Devices, add new device, complete the device information, and get Station ID & Key.
3. Go to the Wi-Fi configuration web page (IP address: 192.168.4.1), click Weather Services from the menu bar on the left, enter Station ID & Key and save.

WU Dashboard vs Live Data

You should be aware that the information presented on weatherunderground.com represents the latest as seen by WU (from the last successful upload), and may not be identical what is on your live data screen!

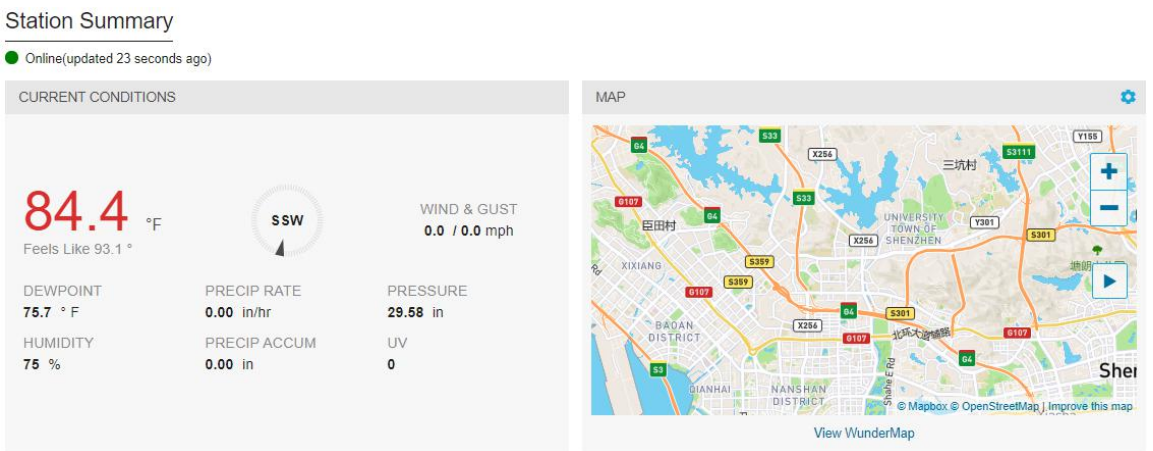
Here is a short explanation of differences:

Live Data is obtained by the mobile app by connecting directly to the gateway. This can only happen when your mobile device and gateway are connected to the same Wi-Fi network. It will then show up after you select “Device List” from the main settings menu. If your mobile device is in another network, no device(s) will show up in this list and you will not be able to select a device for displaying the “Live Data” screen.

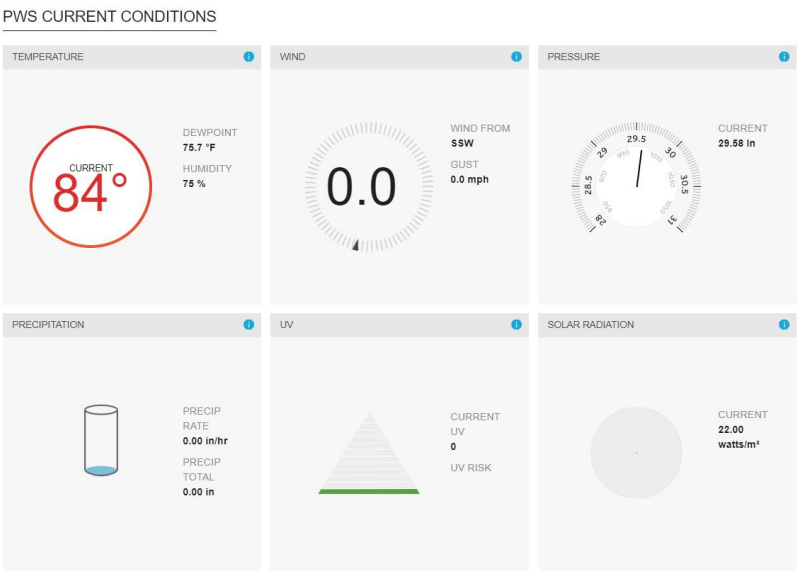
WU Dashboard shows the data obtained from WU server. This requires that your mobile device can reach the Internet and therefore this is possible even when you are not on your home Wi-Fi network, such as when using cellular data.

Note: When the Wi-Fi configuration done, the **WU Dashboard** will be the default interface on the WS View app. Use the **Menu** button can go to the **Device List** interface – select your device to jump to **Live Data** interface.

Station Summary



PWS CURRENT CONDITIONS



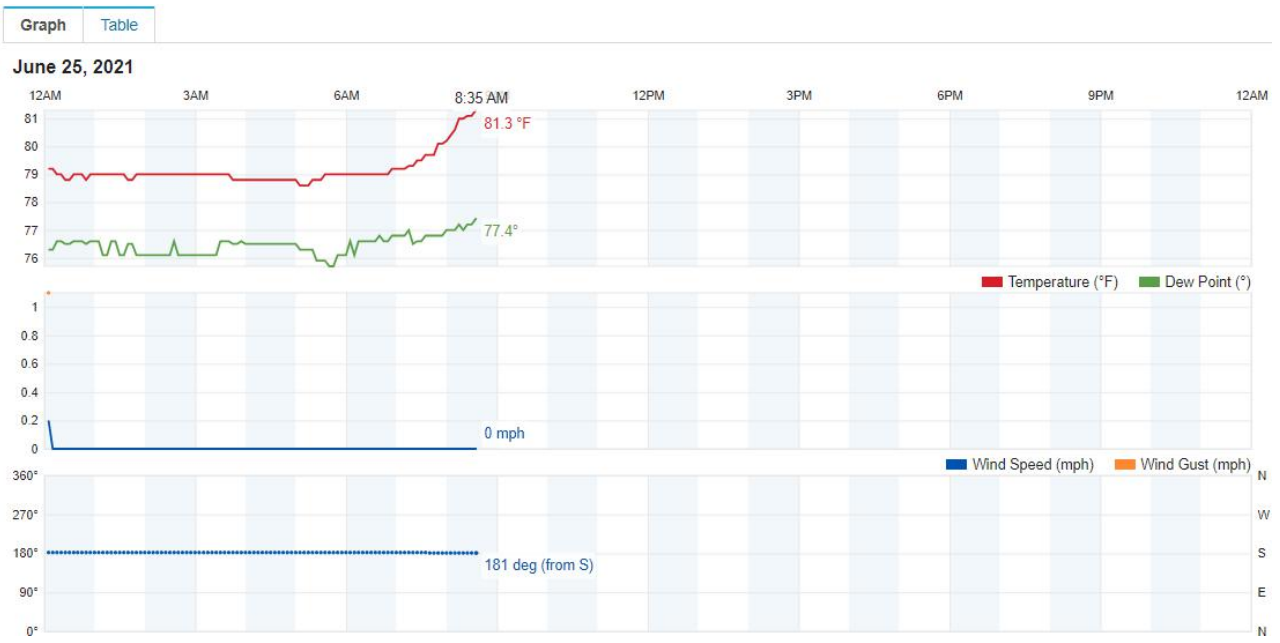
Weather History

Summary
June 25, 2021

	High	Low	Average
Temperature	81.3 °F	78.6 °F	79.1 °F
Dew Point	77.4 °F	75.6 °F	76.4 °F
Humidity	93 %	87 %	91 %
Precipitation	0.00 in	--	--

	High	Low	Average
Wind Speed	0.2 mph	0.0 mph	0.0 mph
Wind Gust	1.1 mph	--	0.0 mph
Wind Direction	--	--	South
Pressure	29.66 in	29.58 in	--

Graph



Table

Graph | Table

June 25, 2021

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
12:04 AM	79.2 °F	76.2 °F	91 %	South	0.0 mph	0.3 mph	29.65 in	0.00 in	0.00 in	0	0 w/m²
12:09 AM	79.1 °F	76.2 °F	91 %	South	0.0 mph	0.0 mph	29.65 in	0.00 in	0.00 in	0	0 w/m²
12:14 AM	79.0 °F	76.1 °F	91 %	South	0.0 mph	0.0 mph	29.65 in	0.00 in	0.00 in	0	0 w/m²
12:19 AM	79.0 °F	76.6 °F	92 %	South	0.0 mph	0.0 mph	29.65 in	0.00 in	0.00 in	0	0 w/m²
12:24 AM	78.8 °F	76.5 °F	92 %	South	0.0 mph	0.0 mph	29.65 in	0.00 in	0.00 in	0	0 w/m²
12:29 AM	78.8 °F	76.1 °F	91 %	South	0.0 mph	0.0 mph	29.66 in	0.00 in	0.00 in	0	0 w/m²
12:34 AM	79.0 °F	76.1 °F	91 %	South	0.0 mph	0.0 mph	29.66 in	0.00 in	0.00 in	0	0 w/m²
12:39 AM	79.0 °F	76.6 °F	92 %	South	0.0 mph	0.0 mph	29.65 in	0.00 in	0.00 in	0	0 w/m²
12:44 AM	78.8 °F	76.5 °F	92 %	South	0.0 mph	0.0 mph	29.65 in	0.00 in	0.00 in	0	0 w/m²
12:49 AM	78.8 °F	76.5 °F	92 %	South	0.0 mph	0.0 mph	29.65 in	0.00 in	0.00 in	0	0 w/m²

6 Troubleshooting Guide

Look through the following table and locate an issue or problem you are experiencing in the left column and read possible solutions in the right column.

Problem	Solution
Relative pressure does not agree with 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.

Problem	Solution
	• The barometer is only accurat e to ± 0.09 inHg (3 hPa) within the following relative p ressure range: 8.86 to 32.48 in Hg (300 -1,100 hPa), which corresponds to an altitude of 2 9,527 ft. (9,000 m) down to 2, 500 ft. (750 m) below sea lev el. 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).
Time is incorrect	Make sure your time zone and daylight savings time setting is correct (even when connected to the Internet via Wi-Fi this is needed).

Problem	Solution
Data not reporting to Wunderground.com	• Confirm your station ID is correct. The station ID is all caps, and the most common issue is substituting a capital letter O for a 0 (zero) or vice versa. Please note the digit 0 can only occur in the last part of the station ID (which is a station number in a city). Example, KAZPHOEN11, not KAZPH0EN11 • Confirm that your password (also called: key) is correct. It is the password wunderground.com generated for your station ID. You can also verify it by logging in to wunderground.com and looking it up under “My Profile-My Devices.” • If there's a number "1" on the

Problem	Solution
	station key, try to input the lower case of letter "L" to replace it on the app. • Make sure the date, time and time zone is correct in the Device Setting. If it is not incorrect, you may be reporting data for a point in the past or future and you may not see it where you expect it. • Check your router firewall settings. The gateway sends data via port 80. If you can access other web sites using “http” (not to be confused with “https”) this setting will be OK.
	• Check for Wi-Fi light on the gateway. If wireless connectivity is operational,

Problem	Solution
No Wi-Fi connection, or gateway configuration failed	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

Problem	Solution
	data/cellular data. • Ensure the DHCP mode is open Try alternative methods. **Method 1:** 1. Power off the gateway. 2. Power on the gateway. 3. Open the Wi-Fi network on your phone or computer, and connect to the hotspot of GW1100-WIFIXXXX. 4. 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

Problem	Solution
	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 still unsuccessfully, please contact our Customer Service Department via email: support@ecowitt.com or support.eu@ecowitt.net (EU/UK).

7 Specifications

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

USB gateway built-in sensor	Specification
Temperature range	-10°C – 60°C (14°F - 140°F)
Temperature resolution	0.1°C, or 0.1°F
Humidity range	1% ~ 99%
Humidity resolution	1%
Barometric pressure range	300 – 1,100 hPa (8.85 – 32.5 inHg)
Barometric pressure accuracy	± 3 hPa in 700 – 1,100 hPa range
Barometric pressure resolution	0.1 hPa (0.01 inHg)

Table 4: USB gateway built-in sensor specification

Power	Specification
USB gateway	5V DC 1A

Table 5: Power specification

Frequency: 915/868/433MHz depending on location
(North American:915MHz; Europe:868MHz; Other areas:433MHz)

8 Warranty Information

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

All trademarks and patents are recognized.

We provide a 1-year limited warranty on this product against manufacturing defects, or defects in materials and workmanship.

This limited warranty begins on the original date of purchase, is valid only on products purchased, and only to the original purchaser of this product. To receive warranty service, the purchaser must contact us for problem determination and service procedures.

This limited warranty covers only actual defects within the product itself and does not cover the cost of installation or removal from a fixed installation, normal set-up or adjustments, or claims based on misrepresentation by the seller, or performance variations resulting from installation-related circumstances.