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

Operation Manual
Model: GW1000

Thank you for purchasing this GW1000 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 read this manual and retain it for future reference.

1 Table of Contents

2 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 "GW1000"
4. Download the manual

3 Overview

3.1 Wi-Fi Gateway

Cable Clip
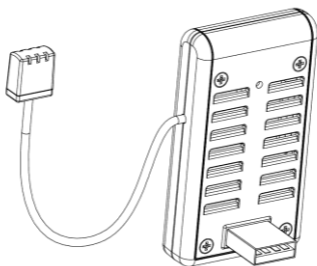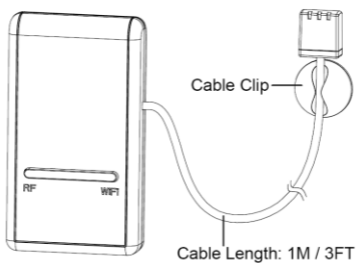
Cable Length: 1M / 3FT

RF   WIFI

Figure 1: Wi-Fi Gateway

3.2 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 interval:

    by day: 5 minutes

    by week: 30 minutes

    by month: 4 hours

    by year: 1 day

  - Stores data for past three months at 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 can all 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: Only sensor data supported by each specific service will be uploaded. 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 GW1000 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.

Help

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).

4 Set up Guide

4.1 Wi-Fi Gateway Introduction

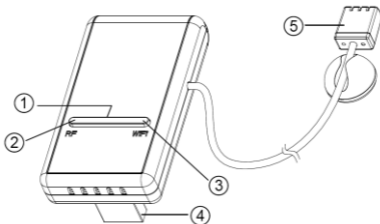See Figure 2 to help you identify elements of the gateway.

Figure 2: Gateway Introduction

1. Wi-Fi Configure/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

Before configuring the gateway with the mobile application, please read the description of the LED indicators (Item 2 and 3) and button (item 1) function for better understanding.

4.1.1 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 no RF data received.

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

- **On** (steady): Indicates connected to Wi-Fi network; network communication normal and data uploaded to configured weather service(s) successfully.
- **Off** (steady): Wi-Fi connection failed.

- **Flash** (slowly), indicates connected to Wi-Fi network; network communication normal, but upload to one or more configured weather services failed. First confirm Internet access through your router is functioning, and then check whether the upload server account and password are correct (use WS View application).
- **Flash** (rapidly), indicates that Wi-Fi configuration mode is active. Use the WS View mobile application to complete the configuration.

4.1.2 Button functions

The black button is used for the following two modes:

Wi-Fi Configure Mode: Press and hold the button for about 5 seconds until the Wi-Fi status LED is flashing rapidly, indicating the gateway is ready for Wi-Fi configuration.

Reset Mode: Hold the black button for about 10 seconds till the red light and blue light flash simultaneously for three times will reset the gateway to factory settings. The history data, Wi-Fi settings, calibration etc. will be all lost and need to be setup again via WS View app.

Note: When powered up, and when there is no valid Wi-Fi configuration (including the very first time), the Wi-Fi status LED will be rapidly flashing. It means that the gateway is in the Wi-Fi configuration mode. Use the mobile application to complete the configuration process.

Note: If you purchased optional sensor(s), you may power up the new sensor(s) at any time and use mobile application's live data view to confirm whether the sensor has been added successfully. If this does not appear the case, also check the **Sensor ID** page to see if the sensor's ID has been registered.

5 Publish to Internet Weather Services

The supported services are shown in the table below:

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

5.1 Gateway Wi-Fi Configuration

The gateway can function as an independent Wi-Fi access point during Wi-Fi configuration. This will be used to allow your mobile application to connect to it directly during configuration (temporarily), passing configuration information about your normal Wi-Fi network to the Gateway so that it can later connect to your preferred Wi-Fi network.

Please follow the following procedure:

1. Download the mobile application (WS View) from the iOS App Store or Google Play store, as appropriate for your device.
2. Connect your gateway with the included USB extension cable and then plug your gateway into an available USB port that supplies power and ensure it is in Wi-Fi configuration mode (red LED flashing fast). If it is not, follow the procedure to put it in that mode (hold down button for about 5 seconds).

3. Start the application and make sure the location permission function is granted (on) when you are running the app for the first time. In case you disabled the location access function for this application, please go to your mobile device settings page and configure it as "on". The application needs your location to configure weather services.
4. Press "Configure New Device". This may be automatic on the very first use of the application.
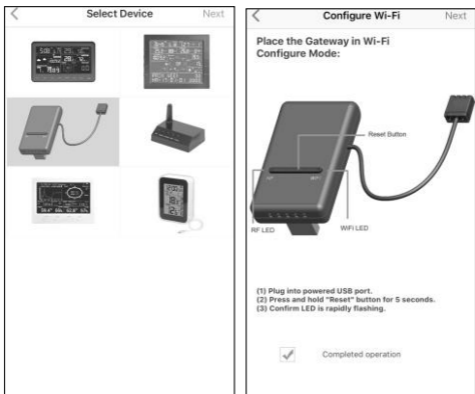5. Tap on the appropriate device type and select "Next". Follow the prompts.

Figure 3: Configure screen

6. Confirm Wi-Fi configuration mode is active, as prompted. Correct if necessary (see above). Press "Next".

7. **For Android version**:
   Enter your preferred Wi-Fi SSID (network name) and security password. You can set the uploading to weather servers (Ecowitt Weather / Weather Underground / Weather

Cloud / WOW / Customized Website) on this page or do that after the Wi-Fi configuration done.

Scroll to the bottom of the screen and press "Save". This will be communicated to the console in a later step.

For iOS version:

Switch your mobile device to the ad-hoc Wi-Fi network created by the gateway. It will be named something like "GW1000-WIFIXXXX" followed by some numbers. Wait until connected (It may take about 60 seconds to connect). You may see a message such as "Unsecured Network" and "No Internet connection": this is normal and please select "CONNECT":
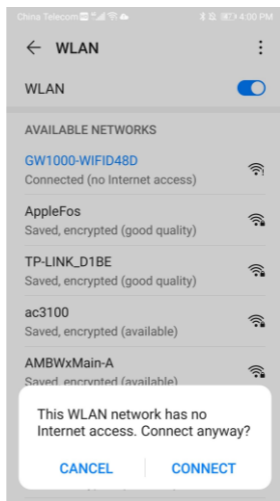
After connected successfully, you can see the networked state is connected:
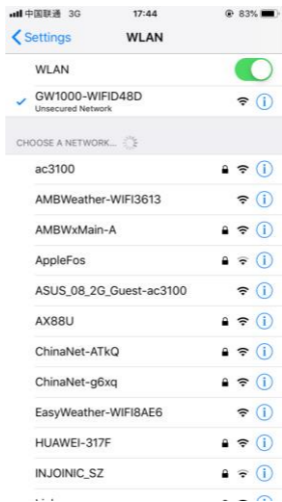
Return to the mobile application. Enter your preferred Wi-Fi SSID (network name) and security password. You can set the uploading to weather servers (Ecowitt Weather / Weather Underground / Weather Cloud / WOW / Customized Website) on

this page or do that after the Wi-Fi configuration done.

Press "Next". This will be communicated to the console in a later step.

8. The connection should be recognized, and you should see a few messages about connecting to the gateway and configuring it. The RED LED on the gateway should now no longer be flashing red.

9. Your mobile device should have been returned to your normal Wi-Fi network setting and the "Live Data" screen should be providing a read-out of your sensors.

Figure 4: Live Data screen

Note: If it displays a blank screen on the Device
List instead of the "Live Data" screen,
please check the following:

- Wait for 1-2 minutes and check whether
  the device will appear and go to the
  "Live Data" screen. Also please ensure
  the following:

- o You have used the 2.4GHz band Wi-Fi network only (dual band is not supported)
- o If your network has one SSID for both 2.4/5 GHz networks and with both networks active, please turn off the 5GHz network off first. Once the Wi-Fi connection done, you can turn the 5GHz network back on.
- o Your mobile data/cellular data has been turned off.

- If the Device List still shows blank, press the "+" button at the upper right corner:
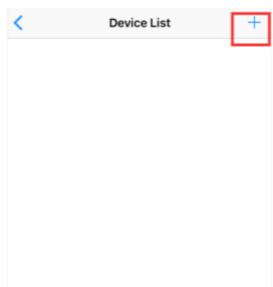
Find the IP address of the gateway and enter it on the app. The IP address can be found at the list of the connected devices of your router:


Direct Connection

In case the device is not showing up in device list page after router configuration is done, you may enter the IP address(to be found on your router for this device) manualy and continue for weather service setup , view live data etc.

Cancel   Connect

Direct Connection

In case the device is not showing up in device list page after router configuration is done, you may enter the IP address(to be found on your router for this device) manualy and continue for weather service setup , view live data etc.

192.168.50.222

Cancel   Connect

Once done, it will enter the Live Data page.

If not, please find the test mode option under the Menu - press the button and let it run for one minute, then send us the screenshot of the log to support@ecowitt.com:
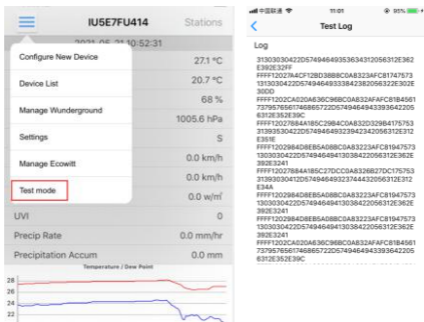
Note: the above and after figures are all from the iOS version application. The operations are almost the same on both Android version and iOS version.

10. Check the data quality and make sure sensor(s) are properly detected by the gateway.
11. With your obtained sensor ID or MAC address, register your device on the dedicated weather service you submitted.
12. If you register with WU, the current day history data(for supported sensors only) can be viewed on WS View app.

5.2 Adding weather services

You may have configured weather services during the initial configuration, or you may do so later. To do so, open the mobile application and select your gateway from the device list. This will bring you to the "Live Data" screen for the gateway.
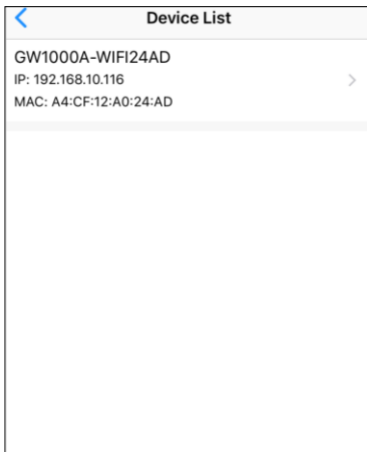
Figure 7: Device List screen

Note: If optional sensor (s) purchased, they will **not** display on the Device List, since only the gateway/receiver would be regarded as a device. You may check the Live Data page to ensure whether the optional sensor (s) data was picked up by the gateway:

Figure 8: Live Data screen when optional sensors added

On the "Live Data" screen, press the "More" button in the upper right and select "Weather Services" from the menu.

Figure 9: Live Data screen with settings menu

Navigate to the weather service you wish to configure by pressing "Next" and enter the appropriate data.

Upload 1

Server

ecowitt.net

Upload Interval (minutes)

| 1 | 2 | 3 | 4 | 5 | ON | OFF |

MAC: A0:20:A6:38:C9:6B

Save

Register at ecowitt.net

Response time

EasyWeatherV1.4.5

Open your Web Browser, go to ecowitt.net or click on the link above.
Enter the MAC address above to register your device.
Return to this application, select an update interval and save.

Upload 2

Server

Wunderground

Station ID

IU5E7FU430

Station Key

lsrling198

Save

Register at Wunderground

Wunderground PWS

EasyWeatherV1.4.5

Upload 3

Server

Weathercloud

Weathercloud ID

Weathercloud Key

Save

Register at Weathercloud

EasyWeatherV1.4.5

Upload 4

Server

WeatherObservationsWebsite

Station ID

Station Key

Save

Register at WeatherObservationsWebsite

EasyWeatherV1.4.5

Figure 10: Weather Services uploading setting screen

5.3 Ecowitt Weather

It's recommended to use the Ecowitt Weather server to monitor and record your sensors' data. Configure as follows:
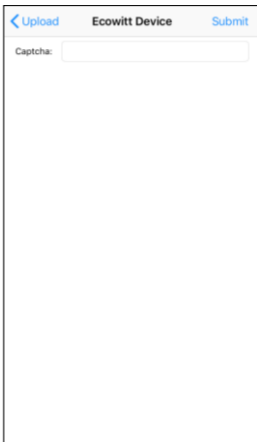
- On the ecowitt.net uploading page, enable the ON button (displayed blue) and set the uploading interval time.
- Press Save on the page.
- Press "Register at ecowitt.net" and finish the registration on the page.

- Press the "+" button and select enter your email address.
- Set a password for your ecowitt account
- Press Submit.
- Enter the captcha you received from your email box and press submit.

- It will jump to the ecowitt.net dashboard and display the sensor data within several minutes.

Note:

If you could not receive the captcha from your email box, please check the spam.

It only supports setting the units and language on the WS View app. To use the full settings, please visit the ecowitt website on your browser or on a computer.

If you could not register on the WS View app, please go to the website to register and add the device.

5.3.1 Viewing data on ecowitt.net

You can observe your sensor's data by using the ecowitt.net web site. You will use a URL like this one, where your station ID replaces the text "STATIONID".

https://www.ecowitt.net/home/index?id=STATIONID

Note: 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.

It will show a page such as this, where you can look at today's data and historical data as well.

Dashboard

Graph display

List display

Weather Map

Email Alerts
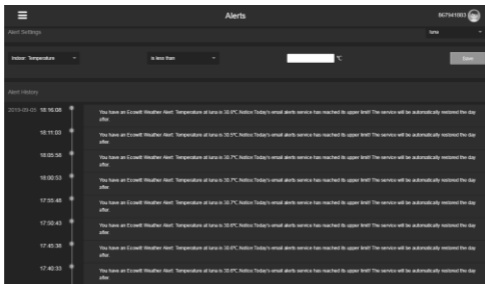
5.4 Weather Underground

If you are planning to use wunderground.com you must have an account and register a (new) personal weather station. You may do so on the Wunderground uploading page in the WS View application:

- Press Register at Wunderground.com and finish the registration on the page (you may choose "other" when selecting device hardware).
- Take note of the PWS identifier (ID) and the password that will be generated for you.
- Back to the app and input the Station ID and Key.
- Press Save.
- Back to the Menu page and select WU Dashboard. You'll see the current WU data, including graphs on the "WU Dashboard" screen within hours.

To add additional WU stations, please follow this procedure:

- Press "Menu" icon (upper left) and choose Manage Wunderground.
- Press "Add WU Station ID" to add a new station, The next screen will let you enter the appropriate information.
- You may also press the "Delete" button next to a specific station to remove it.

5.4.1 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.

5.5 Editing Rain totals

When on the "Live Data" screen, you can press the "More" button (upper right) to enter the calibration screen, or the rain totals screen.

When you select "Calibration" you can change sensor calibration values on the next screen(s).

If you select "Rain Totals" instead, 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.

5.5.1 Calibration of barometric pressure settings

To compare pressure conditions from one location to another, meteorologists correct pressure to sea-level conditions. Because the air pressure decreases as you rise in altitude, the sea-level corrected pressure (the pressure your location would be at if located at sea-level) is generally higher than your measured pressure.

Thus, your absolute pressure may read 28.62 inHg (969 mb) at an altitude of 1000 feet (305 m), but the relative pressure is 30.00 inHg (1016 mb).

The standard sea-level pressure is 29.92 inHg (1013 mb). This is the average sea-level pressure around the world. Relative pressure measurements greater than 29.92 inHg (1013 mb) are considered high pressure and relative pressure measurements less than 29.92 inHg are considered low pressure.

To determine the relative pressure for your location, locate an official reporting station near you (the internet is the best source for real time barometer conditions, such as Weather.com or Wunderground.com), and set your weather station to match the official reporting station.

5.6 Device Settings

On the Live Data page, press "More" on the top-right, and select "Device Settings" to set the following:

- Select sensor type.
- Set time zone.
- Reboot Device.

- Reset to Factory Settings.
- Firmware upgrade (only display when new firmware is available)

5.7 Sensor ID

On Live Data page, press More and select "Sensors ID" to set the following:

- View sensor ID, signal strength and battery power condition. 1-4 bars means 1-4 successful successive signal receptions without missed ones.
- Register the sensor when offline.
- Enable or disable the sensor.
- Input the Sensor ID when offline.

5.8 Device list

When on WU Dashboard screen, you can press the "Menu" button (upper right) and select Device List to view all your devices.

You can press your device to view or modify the settings.

Note: This function requires that your phone and the console is using the same network.

5.9 Manage Wunderground

You can add or delete WU Station ID by selecting "Manage Wunderground"on the submenu:

WU Stations	Add
I44JIUXI35	Delete
I44JIUXI28	Delete
I44JIUXI60	Delete
I44JIUXI74	Delete
IFJELL37	Delete
I44JIUXI65	Delete
I44JIUXI71	Delete
IU5E7FU414	Delete
KCAMOUNT191	Delete
I44JIUXI36	Delete
IU5E7FU429	Delete

5.10 Settings

You can set your desired display units or default home page for the app by selecting "Settings" on the submenu:
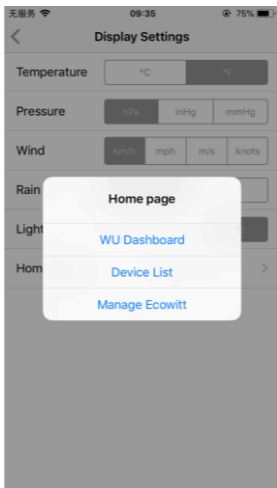
5.11 Manage Ecowitt

Once you created your ecowitt account successful on the WS View app, you may select "Manage Ecowitt" on the submenu to manage your device.
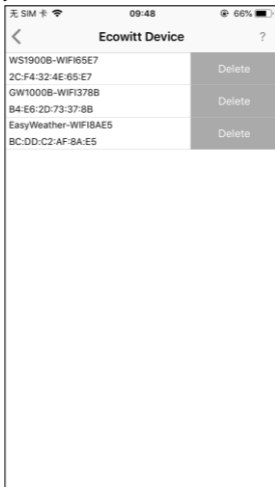
You may view your weather station data by pressing your device on this screen:
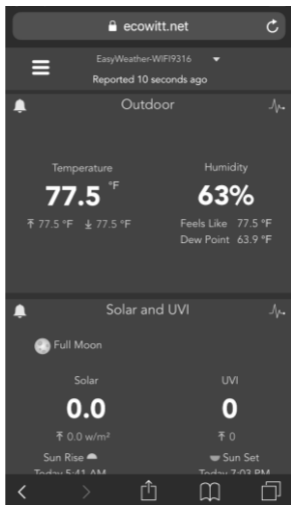
6 Troubleshooting Guide

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. • The barometer is only accurate to ±0.09 inHg (3 hPa) within the following relative pressure range: 8.86 to 32.48 inHg (300 - 1,100 hPa), which

Problem	Solution
	corresponds to an altitude of 29,527 ft. (9,000 m) down to 2,500 ft. (750 m) 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).
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).
Data not reporting to	• Confirm your station ID is correct. The station ID is all caps, and the most common issue is substituting a

Problem	Solution
Wunderground.com	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 PWS."
	• If there's a number "1" on the 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 on the WS View app. 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.

Problem	Solution
	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.
No Wi-Fi connection, or gateway configuration failed	• Check for Wi-Fi light on the gateway. If wireless connectivity is operational, the Wi-Fi light will be steady. Make sure you configured the correct SSID and password. Repeat the procedure as necessary to verify. • The gateway does not support so-called "captive Wi-Fi" networks. These are typically "guest" type networks where users have to agree to terms and conditions before being connected. • Make sure your Wi-Fi supports 2.4 GHz signals (801 type B or G, or N) because Wi-Fi that uses the 5 GHz spectrum is **not supported**. For router with dual band, please disable the 5GHz band. • Turn off your mobile data/cellular data.

Problem	Solution
	• Ensure the DHCP mode is open
	• Enable the location access function for the WS View app on your mobile device settings page
	Try alternative methods.
	Method 1:
	1. Power off the gateway and wait for several minutes.
	2. Power on the gateway and hold the black button for 5s till the red LED flash fast.
	3. Open the Wi-Fi network on your phone and connect to the hotspot of GW1000-WIFIXXXX.
	4. Open the WS View app and click Configure New Device - select GW1000 - click Next
	5. Follow the instructions on the app.
	Method 2:
	1. On a PC, go to our website
	2. go to "Support" and click "MANUAL & SOFTWARE"

Problem	Solution
	3. search for "GW1000"
	4. download and install the "GW1000 Wi-Fi Configuration with PC Software"
	5. Connect PC to the gateway's Wi-Fi hotspot and use the software to configure the gateway.
	6. Now use the mobile app and wait for the gateway to appear in the "Device List"
	Method 3: Reset your router or reset the gateway to factory mode and then try the configuration again
	Method 4: 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 5: Try the configuration using a different

Problem	Solution
	mobile device.
	If still unsuccessfully, please contact our Customer Service Department via email: support@ecowitt.com or ecowittweather@outlook.com.

7 Specifications

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

USB gateway built-in sensor	Specification
Temperature range	-40 ℃ – 60 ℃ (-40 ℉ - 140 ℉)
Temperature resolution	0.1 ℃, or 0.1 ℉
Humidity range	10% ~ 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.