ecowitt®

Weather Station Console Manual

Model: WS2910

https://s.ecowitt.com/GJBUKF

Table of Contents

1. Package

QTY	Item
1	WS2910 Display Console
1	DC to USB Cable(adapter & batteries are not included)
1	User Manual
1	Bracket

Table 1

2. Construction

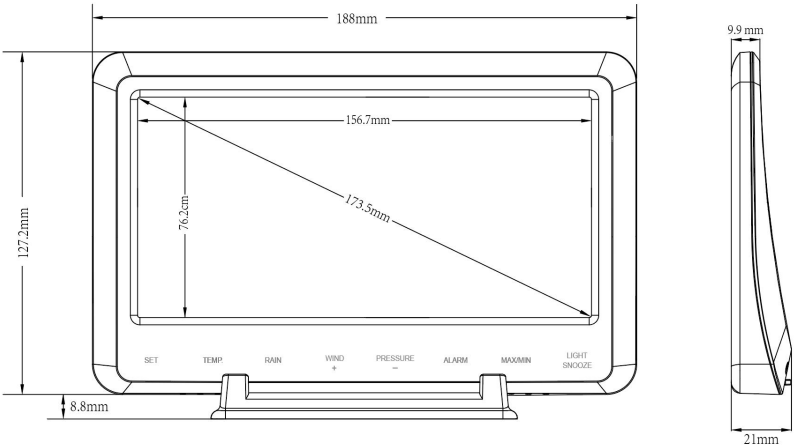


Figure 1: Size

3. Brief Instruction

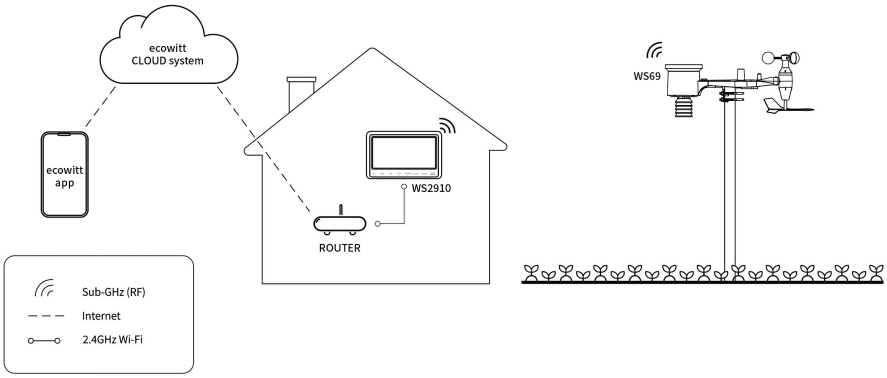


Figure 2: Scenario Diagram

Thank you for purchasing the Ecowitt WS2910 weather station console.

The WS2910 features a 6.8" LCD color display with adjustable brightness, supporting both DC and batteries power. It has built-in sensors for indoor temperature, humidity, and pressure, along with time, clock alarm, and weather forecast functions. When paired with external sensors, it provides data on outdoor temperature, humidity, wind, UV, light, rainfall, and more.

WS2910 supports 2.4 GHz Wi-Fi for viewing weather data remotely from anywhere on your phone, tablet, or computer via a browser, all for free.

Note: The WS2910 requires optional sensors to collect outdoor data and is not a standalone product.

4. First Use

4.1 Power on

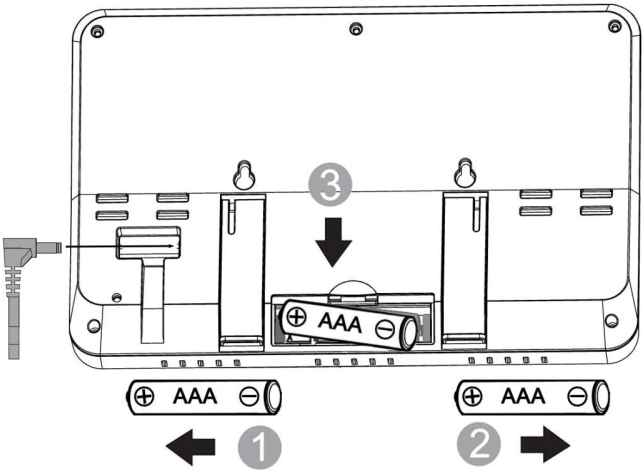


Figure 3

The WS2910 supports both power supply via a 5V 1A DC and 3 AAA batteries.

However, since the upcoming steps involve connecting to Wi-Fi and uploading data, the DC power supply must be used.

After powering on, the Host firmware version (not the Wi-Fi firmware version) and frequency will be displayed for 1 second, followed by a full-screen display for 3 seconds, before the device enters normal operation.

Note: The black pull line in the battery compartment is designed to help remove the batteries.

4.2 Install the Ecowitt App

The following steps are for Wi-Fi network pairing and cloud data upload for mobile access. If online access isn't needed, skip setup and view data directly on the WS2910 console.

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

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

Figure 4

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

4.3 Wi-Fi Configuration

4.3.1 Connect the Station to Wi-Fi via Ecowitt App

(1) Open Ecowitt App →"My Devices"→"Add New Devices"→click WS2910 icon→choose WiFi Provisioning：

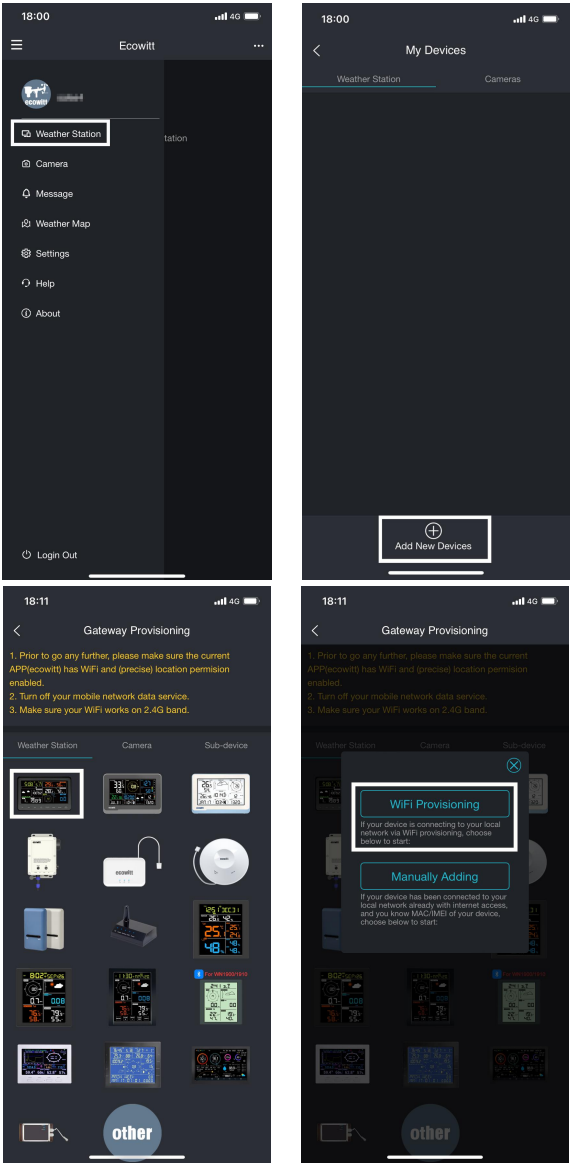


Figure 5

(2) Hold WS2910's button WIND + + PRESSURE - for more than 2s in normal mode will turn on its hotspot, Wi-Fi icon will flash fast on the screen. Use mobile phone to connect to the hotspot "**EasyWeatherPro-xxxxxx**" emitted by WS2910. Then tick "Operation Completed"→"Next".

Note: Wi-Fi will be disabled when the device is powered solely by batteries.

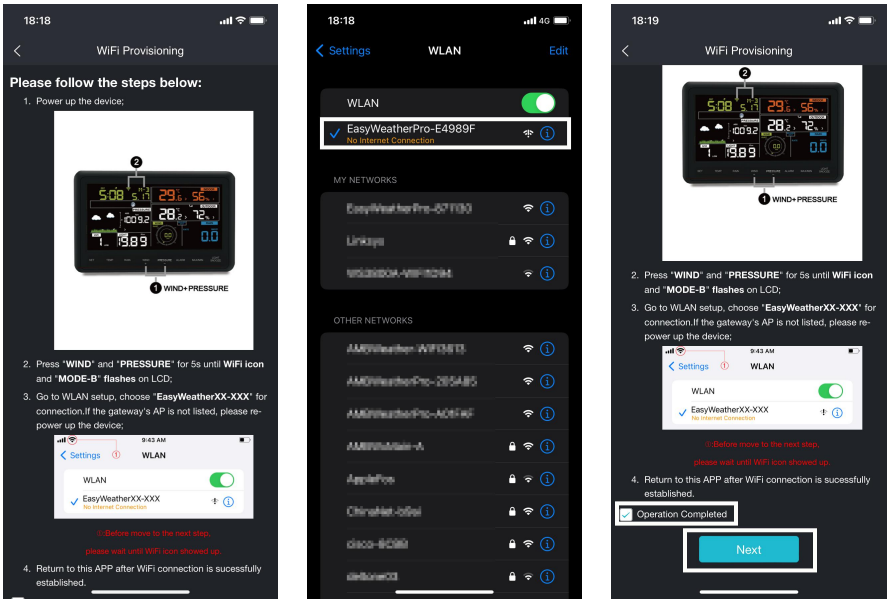


Figure 6

(3) Allow location access, recommend selecting "Allow While Using App". Then return to the Ecowitt App. Then fill in the Wi-Fi SSID and password, then click "Submit".

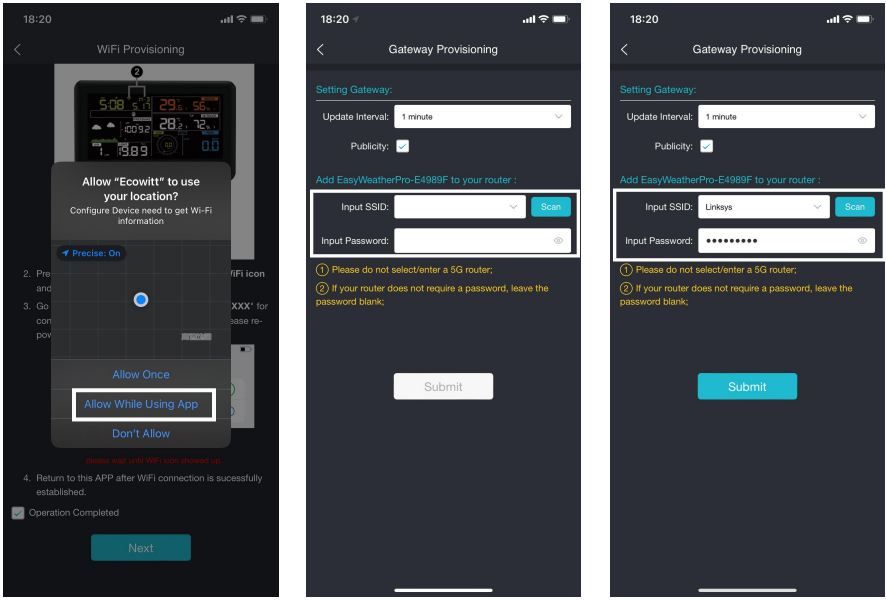


Figure 7

(4) Now the gateway setup is successful. Switch the network of phone to the same Wi-Fi WS2910 is connected to. WS2910 has been successfully added to the App, then the data can be viewed on the App or ecowitt.net.

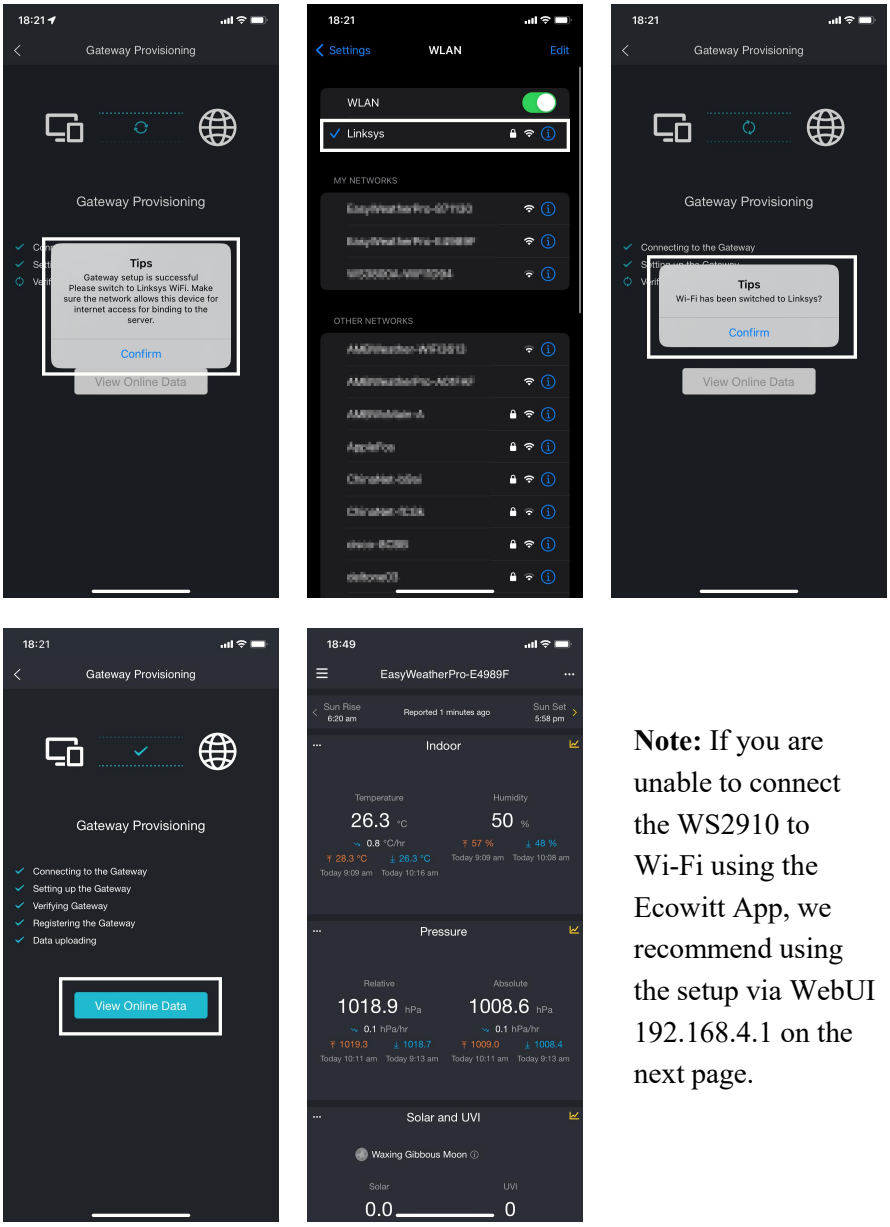


Figure 8

Note: If you are unable to connect the WS2910 to Wi-Fi using the Ecowitt App, we recommend using the setup via WebUI 192.168.4.1 on the next page.

4.3.2 Via WebUI 192.168.4.1

(1) Hold WIND + + PRESSURE - to turn on WS2910's hotspot and connect to this hotspot with your mobile device. Use mobile browser to search the URL: **192.168.4.1**. No password is set by default. Click login.

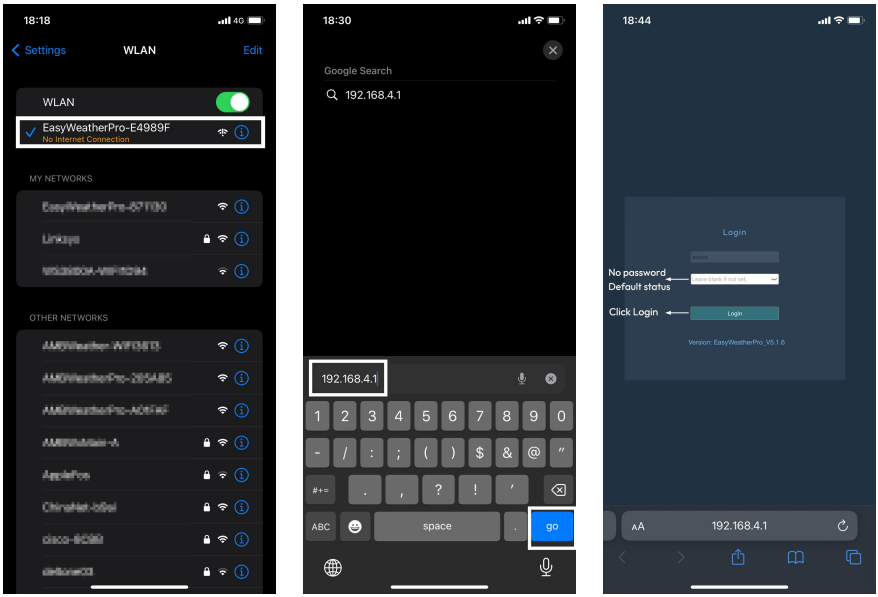


Figure 9

(2) Click Local Network. Input the name(SSID) and password of the router. Now the WS2910 is successfully connected to the Wi-Fi router. Copy the MAC address for the following steps.

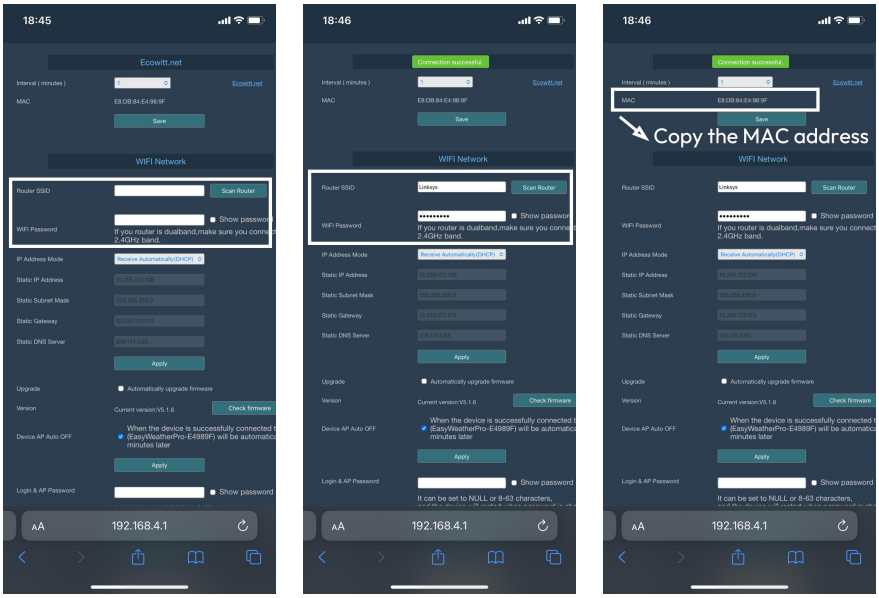


Figure 10

(3) Switch the network of phone to the same Wi-Fi WS2910 is connected to. Open Ecowitt App →"My Devices"→"Add New Devices"→click WS2910 icon→choose Manually Adding.

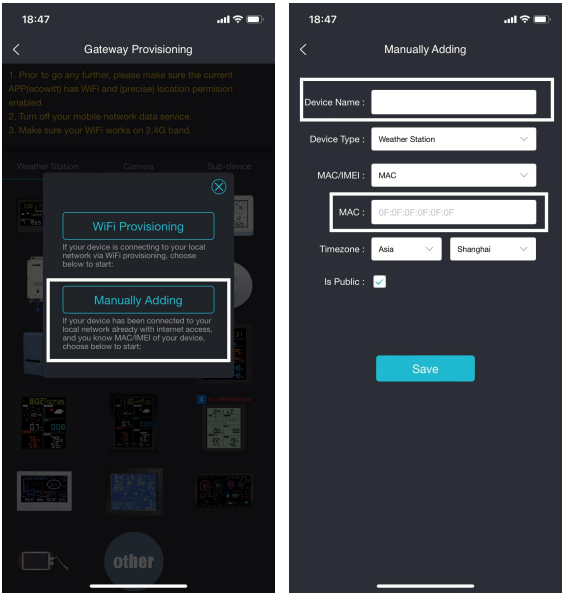


Figure 11

(4) Edit the Device Name and paste the MAC address copied in step (3) into the box, and click "Save", then the data can be viewed online.

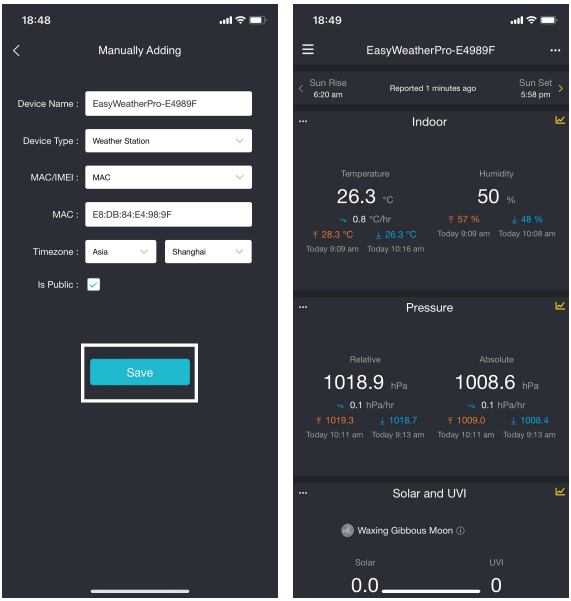


Figure 12

4.4 Device Location, Timezone, DST, and Data Public

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

1. Click on "My Devices".
2. Click on the "..." icon.
3. Set the Device's location and Timezone on this interface. Tick "Auto DST" and "Is Public" when necessary.
5. Click "Save", then reboot the device, the WS2910 will automatically synchronize time and DST.

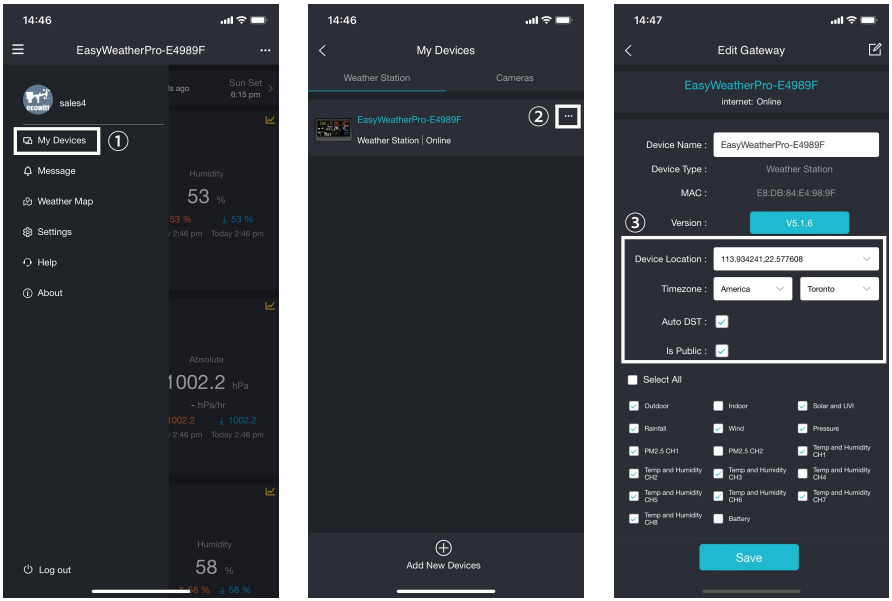


Figure 13

Note: After completing the above Wi-Fi configuration and related settings, the WS2910 screen will display a stable Wi-Fi signal tower, auto time zone, and DST (when necessary).

4.5 Replacing Wi-Fi Router

If you want to change your router, follow **Section 4.3** again.

4.6 Adding Sensors

To pair the optional sensors (refer to **Section 6** for more optional sensors) with the WS2910, please do as follows:

1. Power the sensor on and place it next to the console.
2. Wait for 1~2 minutes, check whether the console will pick up the sensor data automatically and display it on the screen or App.
3. If data is not received from a registered sensor, the RF icon will decrease the signal by one frame; if data is received, the RF icon will

increase the signal by one frame.(Please refer to **Section 5.2.5**)

4. If data is not received, please **restart** or **hold** the LIGHT SNOOZE button for 5 seconds to re-register all the sensors.

Note: In the app or WebUI, the sensor ID page of the WS2910 is unavailable, and sensor ID cannot be registered here.

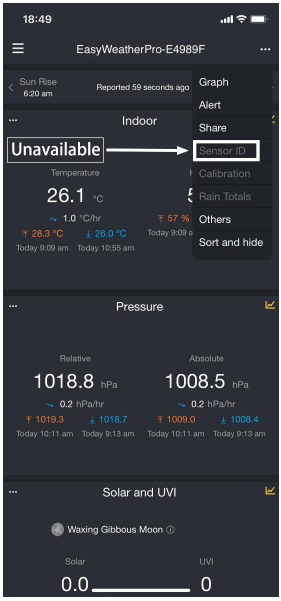


Figure 14

4.7 Upload Data to Server

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

A. ecowitt.net (Default upload to this server)

B. wunderground.com

C. weathercloud.net

D. wow.metoffice.gov.uk

E. Customized servers

Upload servers management:

Ensure that the phone and WS2910 receiver are using the same Wi-Fi.

Ecowitt App → "..." at the top right corner → "Others" → "DIY Upload

Servers".

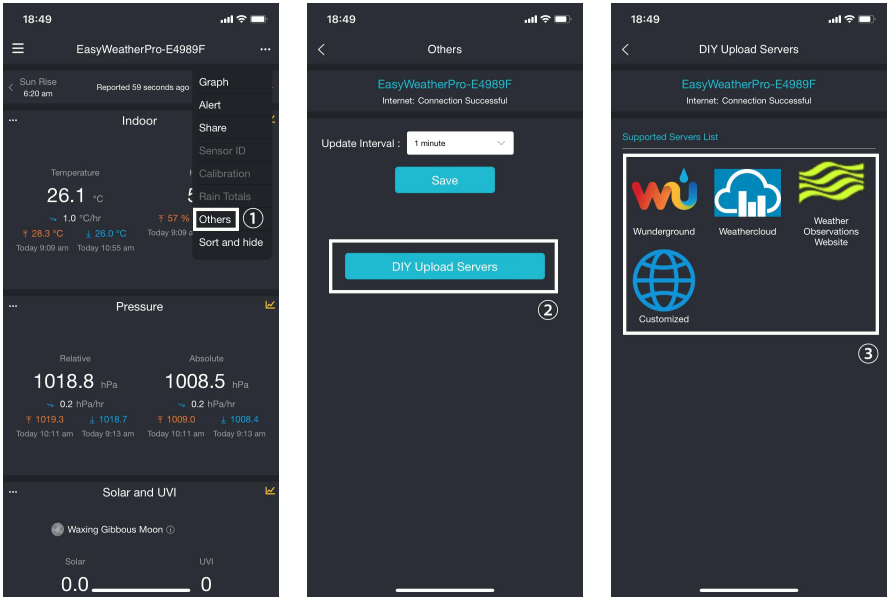


Figure 15

4.7.1 Weather Underground

If you need to upload data to a third-party website, you can follow the steps below, here we take **wunderground.com** as an example:

1. Visit wunderground.com and click **Log in** to create an account:

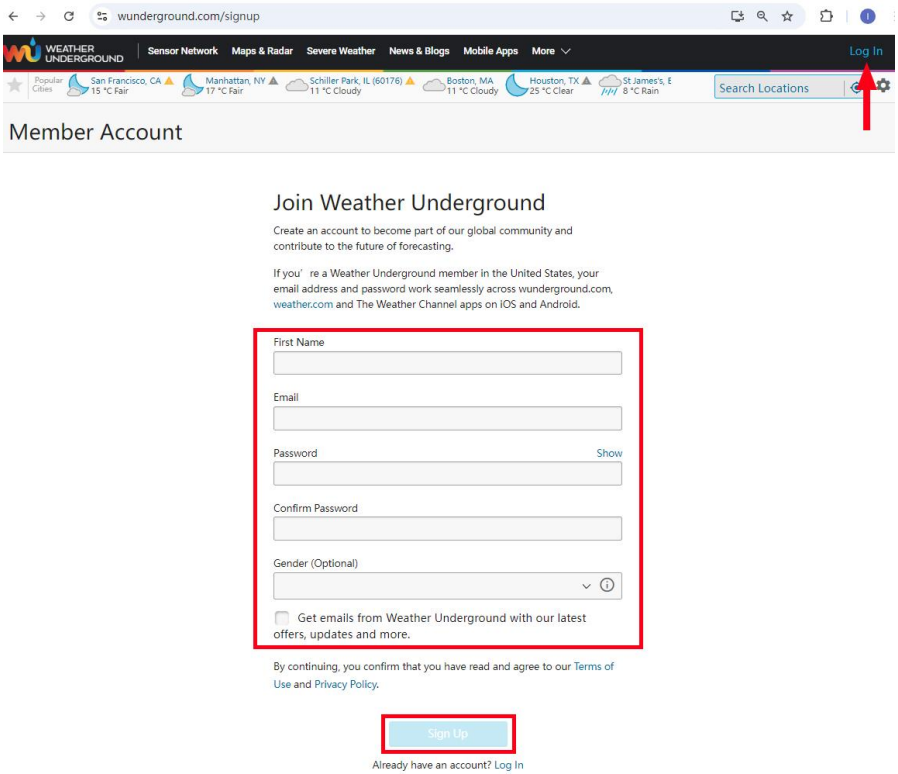


Figure 16

2. Click **My Profile→My Devices**.

Figure 17

3. Select **Add New Device**.

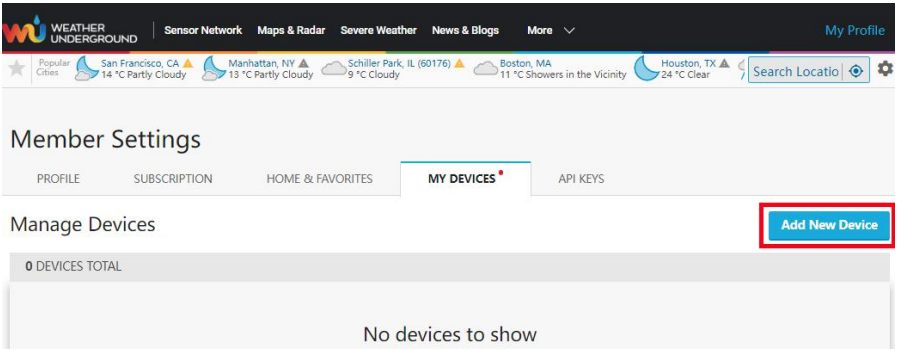


Figure 18

4. Find **Personal Weather Station**, select **other** and click **Next.**

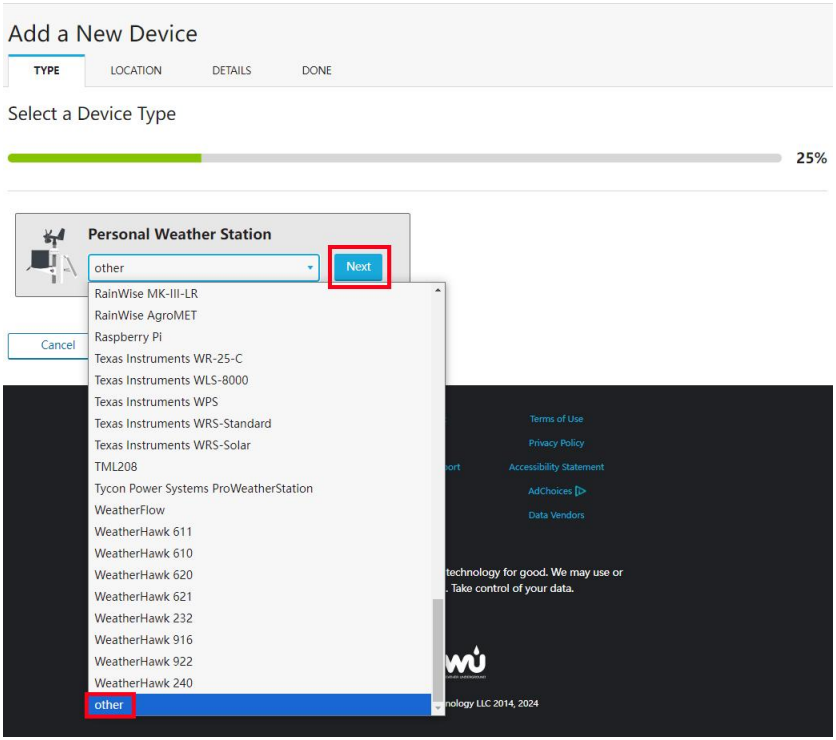


Figure 19

5. Select **Address** or **Manual**, and find your local position. Press **Next**.

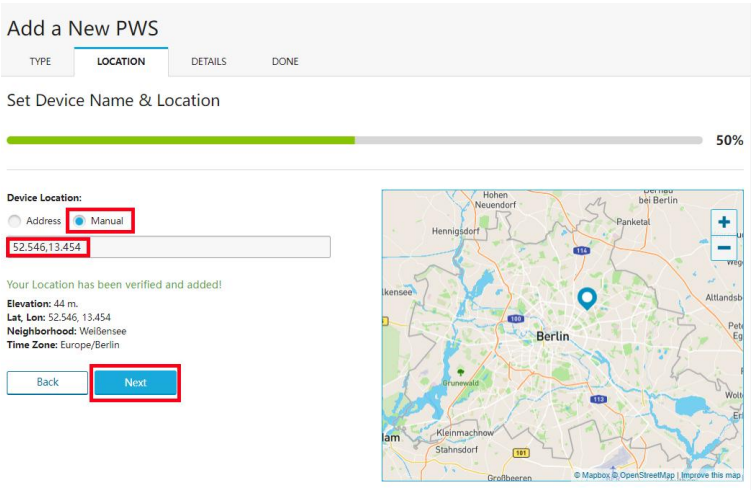


Figure 20

6. Fill out the details and go ahead.

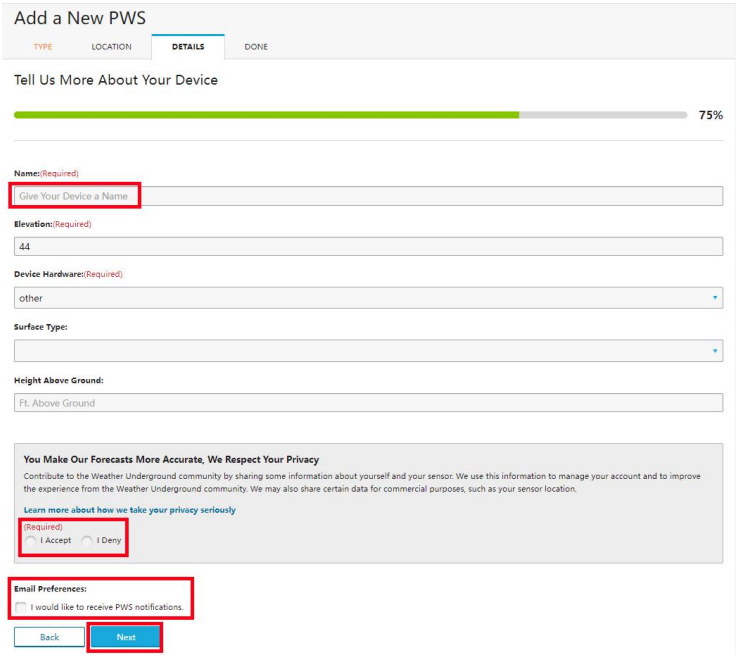


Figure 21

7. Then registration complete, you will see **Station ID** and **Station key.**

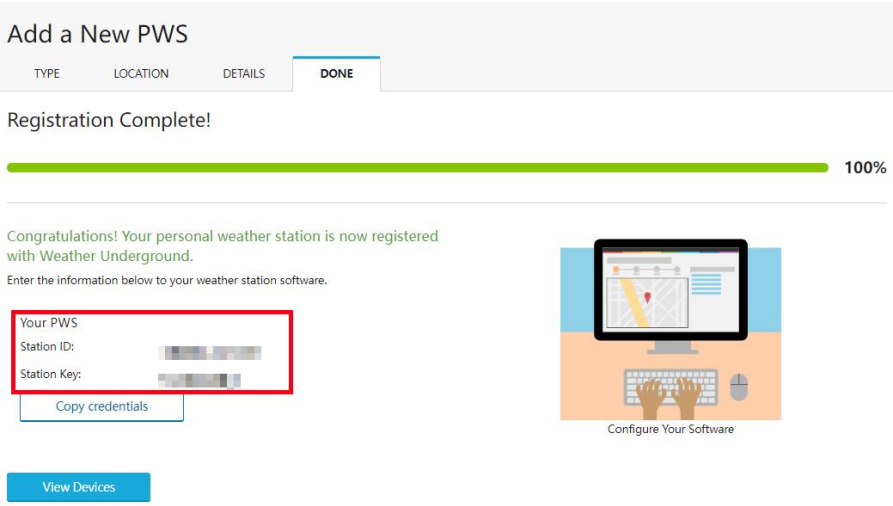


Figure 22

8. Enter the **Station ID** & **Station Key** and select **Save** on the ecowitt App. The data can then be viewed on wunderground.com.

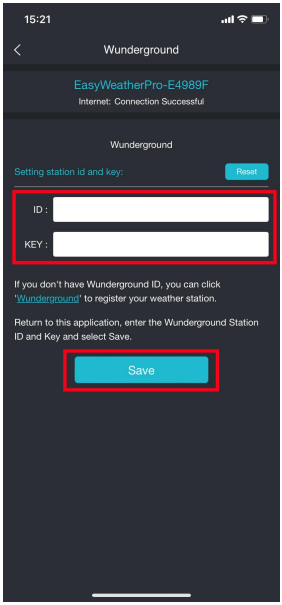


Figure 23

4.8 Factory Reset / Clear Memory

Re-power up the device and hold WIND + + PRESSURE - after the full screen display to perform a factory reset. This will clear all records memory and reset all user settings to default.

5. Instructions for Use

5.1 Features

- 6.8 inch color display with 8 touch buttons
- Supports DC powered and 3 x AAA alkaline or lithium batteries powered(3 AAA batteries (not included) can run for 6 months, no Wi-Fi or cloud upload.)
- Indoor Temperature and Humidity with trend
- Absolute and Relative barometric pressure, and history graph
- Support receiving and displaying outdoor temperature, outdoor humidity, wind speed, gust speed, wind direction, rainfall, UV, light, wind chill, dew point, and heat index. Please refer to Section 6 for supported optional sensors
- Weather forecast: Sunny, Partly sunny, Cloudy, Rainy, Stormy and Snowy
- Calendar (2000-2099 Default Year 2023), Time, Moon phase
- Support unit setting
- Record Max & Min value
- Support DST (Daylight Saving Time)
- Alarm & Snooze function
- High/low alarm options for sensors
- User accuracy calibration supported
- Support backlight adjustment under DC power supply
- Automatically save user set parameters (unit, calibration, alarm...)
- Support uploading data to the weather station server after connecting to the Wi-Fi network, please refer to Section 4.7
- Data storage and export on the Ecowitt server: https://ecowitt.net

5.2 Screen Display

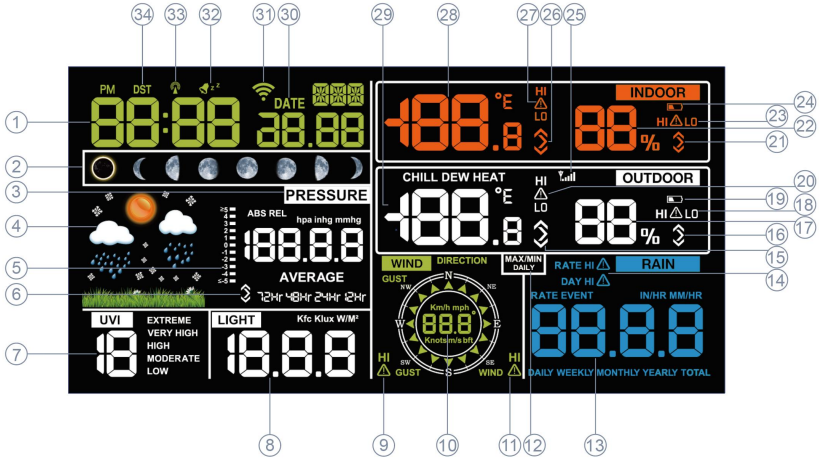


Figure 24

1	Time	2	Moon phase
3	ABS/REL pressure	4	Weather forecast
5	Rate of Change of Pressure Graph	6	Tendency indicator of pressure
7	UV index	8	Solar Radiation (Light)
9	High alarm of gust speed	10	Wind speed/Gust/Direction
11	High alarm of wind speed	12	MAX/MIN daily
13	Rain Rate/Event/Daily/ Weekly/Monthly/Yearly/ Total	14	High alarm of rain rate & rain daily
15	Tendency indicator of outdoor temperature	16	Tendency indicator of outdoor humidity
17	Outdoor humidity	18	High/Low alarm of outdoor humidity
19	Low battery power indicator for WS69	20	High/Low alarm of outdoor temperature

21	Tendency indicator of indoor humidity	22	Indoor humidity
23	High/Low alarm of indoor humidity	24	Low battery power/no battery indicator for WS2910
25	RF signal bar for WS69	26	Tendency indicator of indoor temperature
27	High/Low alarm of indoor temperature	28	Indoor temperature
29	Outdoor temperature & Chill, Dew point, Heat	30	Date
31	Wi-Fi signal	32	Alarm & Snooze
33	No longer used	34	DST (Daylight Saving Time)

Table 2

5.2.1 Date & Time

The date and time will be automatically updated when the Wi-Fi configuration is finished, and the automatic time zone is set. (refer to **Section 4.3** for Wi-Fi configuration)

If Wi-Fi is unavailable, setup can also be performed directly on the device.

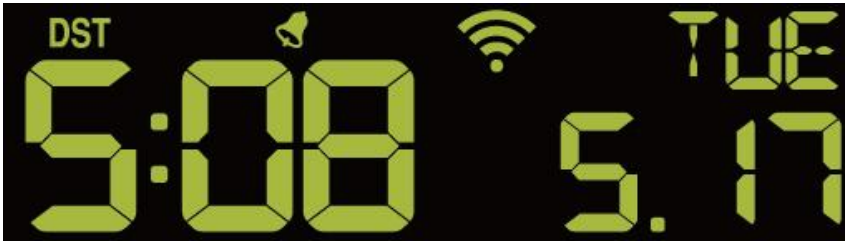


Figure 25

5.2.2 Weather Forecast

There are 6 weather conditions: Sunny, Partly Cloudy, Cloudy, Rainy, Stormy and Snowy.

Weather forecast is based on the rate of change of barometric pressure.

Please allow at least one month for the weather station to learn the barometric pressure and then predict the upcoming day's weather based on pressure changes.

When the outdoor temperature is below 0°C (32°F) and the weather forecast is Rainy or Stormy, the LCD will display the Snowy.

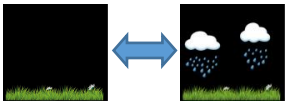
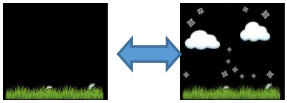
Sunny	**Partly Sunny**	**Cloudy**
		
Pressure increases for a sustained period of time	Pressure increases slightly	Pressure decreases slightly
Rainy	**Stormy**	**Snowy**
		
Pressure decreases for a sustained period of time	Pressure rapidly decreases (Blink for 30 minutes at most)	Pressure decreases for a sustained period of time and temperature is below freezing
Storm Snowy		
		
Pressure rapidly decreases, and temperature ≤0°C (Blink for 30 minutes at most)		

Table 3

5.2.3 Tendency Indicators

Tendency arrows allow you to quickly determine of temperature or pressure are rising and falling in a three hour update period, updated every 30 minutes.

Eg. : At 3:00 - compare to 12:00 data; at 3:30 -compare to 12:30 ….. etc

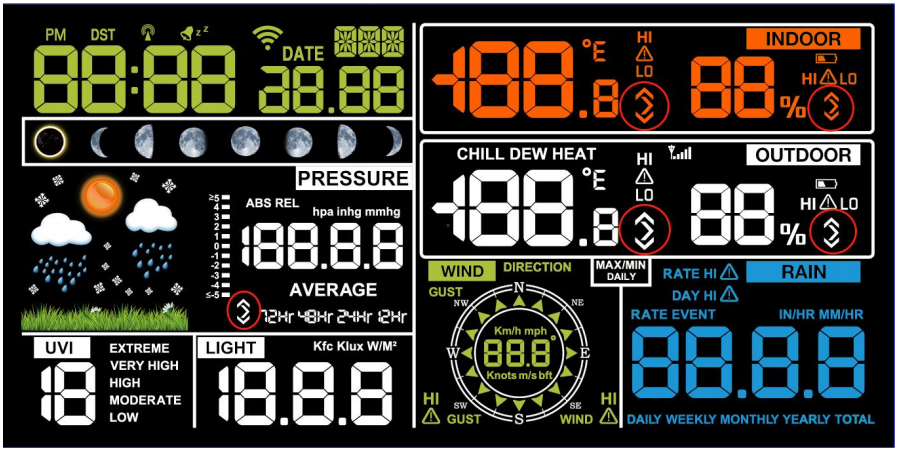


Figure 26

Tendency indicators	Condition	Humidity	Temperature	Pressure
∧	Rising	Rising > 3%	Rising >= 1C/2F	Rising > 1hpa
>	Steady	Change <= 3%	Change < 1C/2F	Change <= 1hpa
∨	Falling	Falling > 3%	Falling >= 1C/2F	Falling > 1hpa

Table 4: Tendency Indicators

5.2.4 Wi-Fi Icon

If the Wi-Fi module is connected, it must be powered by DC; otherwise, the Wi-Fi will not function.

Wi-Fi only supports uploading the current data to weather server and time will be based on Internet time.

Wi-Fi icon status:

(1) Not connected to routers: Wi-Fi icon does not display.

(2) Router connected, but no network: Wi-Fi icon flashes slowly.

(3) Connected to a router with network: Wi-Fi icon is solid.

(4) Device power up or hold WIND + + PRESSURE -, Wi-Fi icon flashes quickly.

5.2.5 Wireless Signal Strength Indicator

The wireless signal strength displays reception quality. If no signal is lost, the signal strength indicator will display 5 bars. If the signal is lost once, four bars will be displayed.

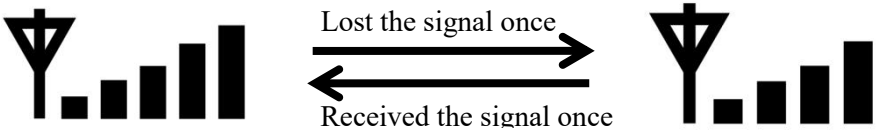


Figure 27

5.2.6 Indoor Temperature, Humidity, and Pressure

WS2910 has a built-in temperature & humidity sensor, and a barometric pressure sensor, measuring indoor conditions every 60 seconds. If the temperature is lower/higher than the range, it will display --.-.

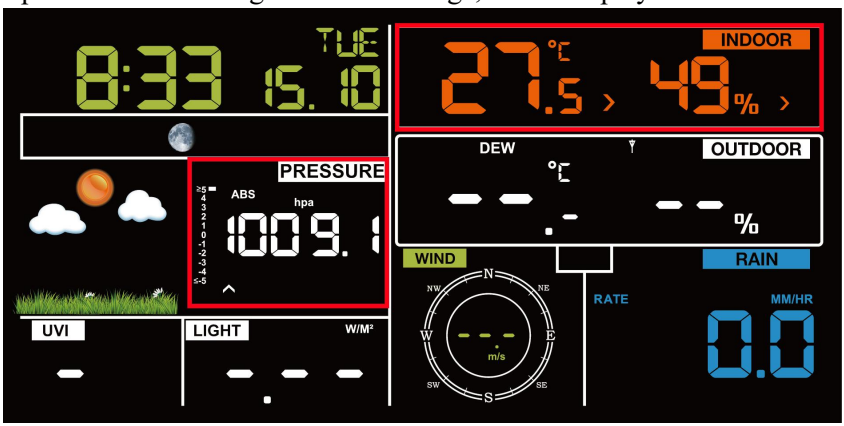


Figure 28

5.2.7 Outdoor Temp & Humidity, Chill, Dew point and Heat

Outdoor temperature and humidity are displayed, and wind chill, dew point, and heat index (heat index is also known as feels like or apparent temperature) are calculated here. Press the TEMP button to switch.

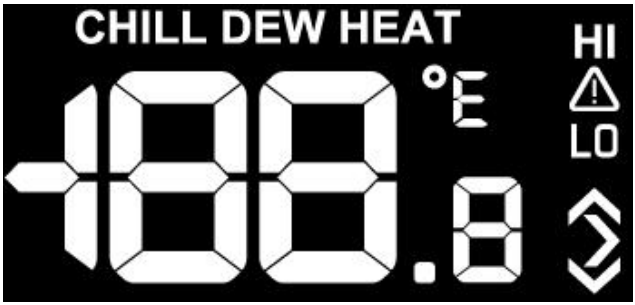


Figure 29

5.2.8 Wind

Press the WIND + button to switch between Wind speed, gust and direction.
Wind speed: the average wind speed in the 16 second update period.
Wind gust: the peak wind speed in the 16 second update period.

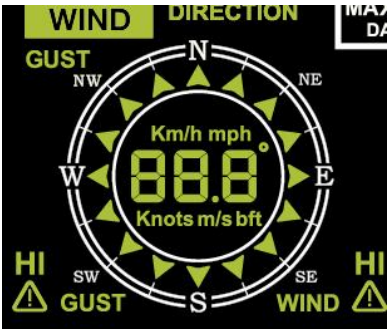


Figure 30

5.2.9 Rainfall

Rate/H: The last 10 minutes of rainfall multiplied by 6.
Event: If the last 24-hour rainfall is less than 1 mm and the last 1 hour has not had rainfall, the rain event is over.
Daily: Rainfall from 0:00 to 24:00, reset time can be set on the App.
Weekly: The rainfall of Sunday ~ Saturday/Monday ~ Sunday, the start time can be set.
Monthly: Rainfall of a natural month.
Yearly: Rainfall of a year, the start month can be set.

Total: Running total since station was powered up.

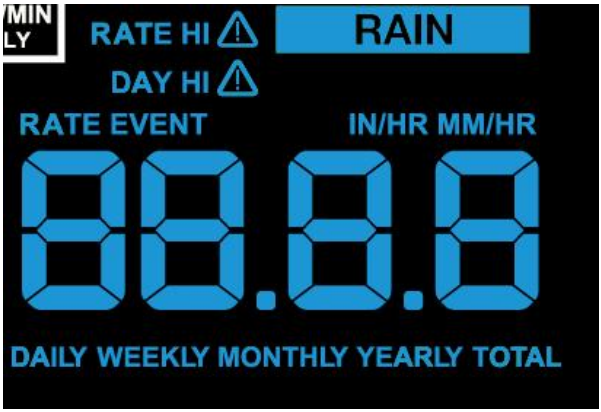


Figure 31

5.2.10 UVI & Light

The UV index varies between 0 ~ 15.

EXTREME: 11 to 15
VERY HIGH: 8 to 10
HIGH: 6 to 7
MODERATE: 3 to 5
LOW: 0 to 2

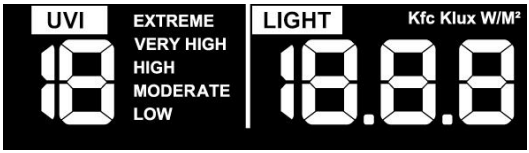


Figure 32

Note 1: Sections 5.2.7 to 5.2.10 require external outdoor sensors connection to display data.
Note 2: The external sensor will send the wind speed, wind direction and rainfall every 16s.

5.2.11 Moon Phase

The WS2910 will be set to the Southern or Northern Hemisphere by default depending on the RF frequency:
915/868MHz: Northern Hemisphere. **433MHz:** Southern Hemisphere
The following moon phases are displayed based on the calendar date.

Northern Hemisphere:

							
New Moon	Waxing Crescent	First Quarter	Waxing Gibbous	Full Moon	Waning Gibbous	Third Quarter	Waning Crescent

Sorthern Hemisphere:

							
New Moon	Waxing Crescent	First Quarter	Waxing Gibbous	Full Moon	Waning Gibbous	Third Quarter	Waning Crescent

Table 5

5.2.12 Rate of Change of Pressure Graph

The rate of change of pressure graphic is shown to the left of the barometric pressure and signifies the difference between the daily average pressure and the 30 day average (in hPa).

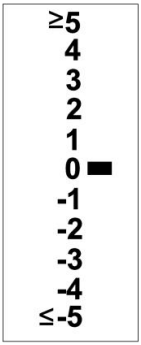


Figure 33

5.3 Touch Buttons

Button	Description
SET	1. Hold to enter the Setting mode. 2. In normal display, press this button will display the MAC address of the device.
TEMP	1. Press to switch between Outdoor Temperature, Wind Chill, Dew Point and Heat Index. 2. Hold for 5S will re-register all the sensors.

RAIN	1. Press to switch between Rain Rate, Rain Event, Rain Daily, Weekly, Monthly, Yearly and Total. 2. Hold the button for 2s to reset current display rain.
WIND +	1. Press to switch between Wind Speed, Wind Gust and Wind Direction. 2. While in Setting mode, press to increase the value. Hold for two seconds to increase the value rapidly.
PRESSURE -	1. Hold to switch between Relative and Absolute Pressure. 2. Press to switch 12hr, 24hr, 48hr and 72hr average relative(or absolute) pressure. 3. While in Setting mode, press to decrease the value. Hold for two seconds to decrease the value rapidly.
ALARM	1. Press to switch between high and low alarms. 2. Hold to set high and low alarms.
MAX/MIN	Press to switch between minimum and maximum values.
LIGHT SNOOZE	1. Press to adjust the LCD backlight brightness (high, medium and off) under DC power supply. 2. Press to exit the Setting mode at any time.
TEMP + MAX/MIN	Hold together for 5S to enter Calibration mode.
WIND + + PRESSURE -	Hold together for 5S to activate Wi-Fi hotspot.

Table 6

Note:

1) The setting procedure can be exited at any time by either pressing the LIGHT SNOOZE button or waiting for the 30-second time-out to take effect.

5.4 Modes

5.4.1 Normal Mode

(1) SET button: Press to display MAC address: E8:DB:84:E4:98:9F

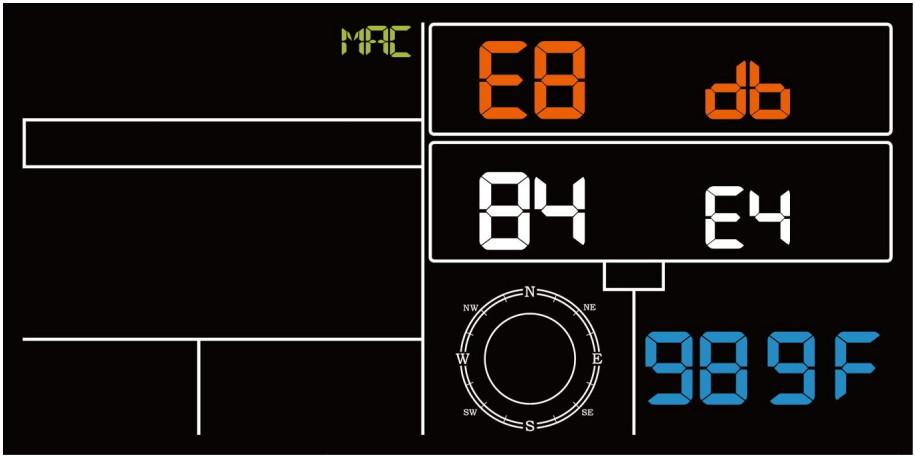


Figure 34

(2) RAIN button:

Press the RAIN button to view rain rate, event, daily, weekly, monthly, yearly and total.

Hold the RAIN button 2s to reset current display rain.

Note:

Reset daily rain, will auto reset rate and event rain.

Reset weekly rain, will auto reset daily, rate and event rain.

Reset monthly rain, will auto reset daily, weekly, rate and event rain.

Reset yearly rain, will auto reset daily, weekly, monthly, rate and event rain.

Reset total rain, will auto reset daily, weekly, monthly, yearly, rate and event rain.

For example:

If

Daily rainfall reset time is 8:00

Month rainfall reset time is MON
Yearly rainfall reset time is MAY.
That
the daily rainfall will be reset to 0 at 8:00 every day,
the weekly rainfall will be reset to 0 at 8:00 very Monday,
the monthly rainfall will be reset to 0 at 8:00 on 1st each month,
the yearly rainfall will be reset to 0 at 8:00 on May 1st every year.

(3) For the rest of the button function, please see Section 5.3.

5.4.2 Setting Mode

Hold SET button for 2 seconds to enter the **Setting Mode,** press WIND + or PRESSURE - to adjust the setting value, press the LIGHT SNOOZE button to exit the Setting Mode at any time.

(1) Beep (ON/OFF)
(2) RST MAX/MIN daily ON/OFF (default ON, ON: clear at 0:00 every day) RST
(3) Hour format (24H/12H)
(4) Hour and Minute setting
(5) Month/Day format (M/D or D/M)
(6) Year, Month, Day settings
(7) Pressure unit select (hpa, inhg, mmhg)
(8) Relative pressure value set(700hpa-1100hpa)
(9) Light unit select (Kfc, Klux, W/M2)
(10) Temperature unit select (°C/°F)
(11) Wind unit select (Km/h, mph, Knots, m/s, bft)
(12) Rainfall unit select (in/mm)
(13) Daily rainfall reset time (0:00~23:00)
(14) Month rainfall reset time (SUN/MON)
(15) Yearly rainfall reset time (JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC)
(16) Southern and northern hemisphere select(NTH/STH)

5.4.3 Alarm Mode

Display of alarm value:

Press ALARM button to display high/low alarm:

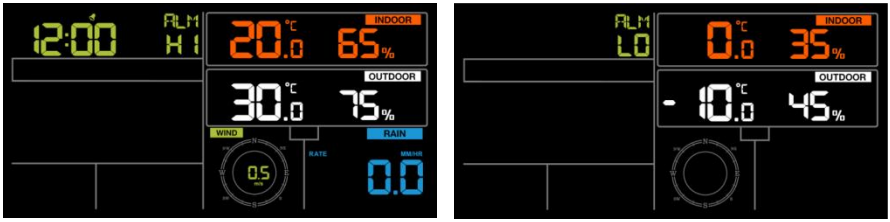


Figure 35

Note:

- Press RAIN button to select display rain rate or rain daily alarm data.
- Press WIND + button to select display wind or gust alarm data.

Alarm mode setting:

- Hold ALARM button for 2S to enter alarm setting mode.
- Press the WIND + or PRESSURE - to adjust alert values.
- Press the SET button to confirm & move to the next setting.
- Press the ALARM button to enable/disable the alarm(, HI , LO).

Note: When the alarm is triggered, the current triggering source icon for time, the HI icon for high value, and the LO icon for low value will **emit beeping sounds and flash**, indicating that the alert has been triggered. Press any button to stop the sound except LIGHT SNOOZE button to stop the alarm.

Snooze：

When time alarm has been triggered, the alarm will sound and the alarm icon will flash for 120s. Press LIGHT SNOOZE button to silence the alarm for 10 minutes and then the alarm will sound again when that time is up.

Alarm Setting Order:

(1) Time alarm setting
(2) Indoor high temperature setting
(3) Indoor low temperature setting
(4) Indoor high humidity setting
(5) Indoor low humidity setting
(6) Outdoor high temperature setting
(7) Outdoor low temperature setting
(8) Outdoor high humidity setting
(9) Outdoor low humidity setting
(10) High wind setting
(11) High gust setting
(12) Rain rate high setting
(13) Rain day high setting

5.4.4 Max/Min Mode

- Press MAX/MIN to button to display high/low alarm.
- Hold the MAX/MIN button for 2 seconds to reset all maximum and minimum values.
- Press TEMP to view wind chill, dew point minimum, heat index, and dew point maximum and minimums.
- Press RAIN to view rain rate, day, week, and month maximum.
- Press WIND + to view wind speed and gust maximum.
- Hold the PRESSURE - button for 2 seconds to view absolute and relative pressure maximums and minimums.
- Press LIGHT SNOOZE button or button idle 30 second at any time, will return to normal mode.

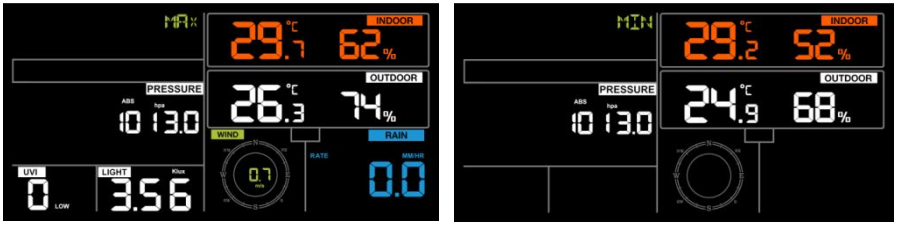


Figure 36

5.4.5 Calibration Mode

Note: The calibrated value can only be adjusted on the console. The remote sensor(s) always displays the un-calibrated or measured value.

Hold TEMP and MAX/MIN buttons together for 5 seconds to enter calibration mode. The **CAL** icon will be displayed.
- Press the WIND + or PRESSURE - to adjust values.
- Press the SET button to confirm & move to the next item.
- Press the ALARM button to reset any adjusted value.
- Press the LIGHT SNOOZE button at any time to exit.

5.4.5.1 Calibration Order:

- Indoor temperature offset calibrated (range +/-9°F, default: 0 degrees)
- Indoor humidity offset calibrated (range +/-10%)
- Outdoor temperature offset calibrated (range +/-9°F, default: 0 degrees)
- Outdoor humidity offset calibrated (range +/-10%)
- Absolute pressure offset calibrated (range +/-50hpa)
- Wind direction offset calibrated (adjust by degree)
- Wind speed factor adjust, default 100% (range 50% to 150%)
- Rain factor adjust, default 100% (range 50% to 150%)
- Daily rainfall calibration (range 0~9999mm)
- Monthly rainfall calibration (range 0~9999mm)
- Weekly rainfall calibration (range 0~9999mm)

- Yearly rainfall calibration (range 0~9999mm)
- Total rainfall calibration (range 0~9999mm)
- Light factor adjust, default 100% (range 30% to 250%)
- UVI factor adjust, default 100% (range 30% to 250%)

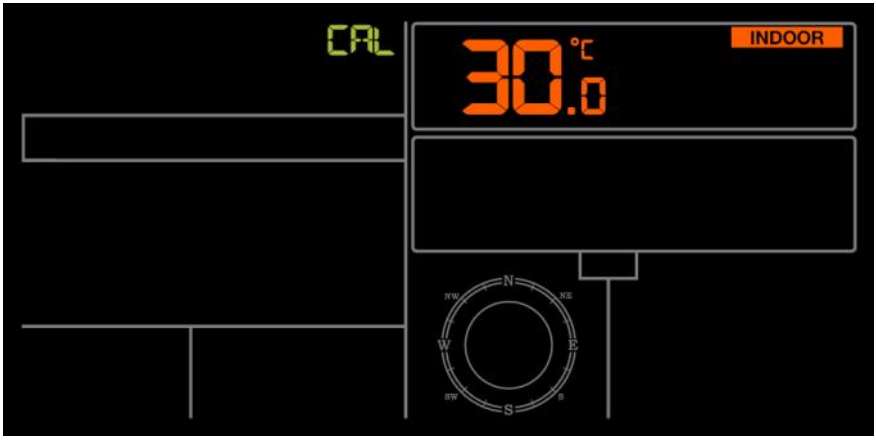


Figure 37

5.4.5.2 Calibration Discussion

The purpose of calibration is to fine-tune or correct any sensor error associated with the device's margin of error. Errors can occur due to electronic variation (for example, the temperature sensor is a resistive thermal device or RTD, and the humidity sensor is a capacitance device), mechanical variation, or degradation (wearing of moving parts, contamination of sensors).

Calibration is only useful if you have a known calibrated source you can compare it against, and it is optional. This section discusses practices, procedures, and sources for sensor calibration to reduce manufacturing and degradation errors. Do not compare your readings obtained from sources such as the internet, radio, television, or newspapers. The purpose of your weather station is to measure conditions of your surroundings, which vary significantly from location to location.

Parameter	Type of Calibration	Default	Typical Calibration Source
Temperature	Offset	Current Value	Red Spirit or Mercury Thermometer (1)
Humidity	Offset	Current Value	Sling Psychrometer (2)
ABS Barometer	Offset	Current Value	Calibrated laboratory grade barometer
REL Barometer	Offset	Current Value	Local airport (3)
Wind Direction	Offset	Current Value	GPS, Compass (4)
Wind	Gain	1.00	Calibrated laboratory grade wind meter (5)
Rain	Gain	1.00	Sight glass rain gauge with an aperture of at least 4" or 0.1m (6)

Table 7

(1) Temperature Calibration

Potential Errors:

Temperature errors can occur when a sensor is placed too close to a heat source (such as a building structure, the ground and trees).

Calibration Method:

To calibrate temperature, we recommend a red spirit (fluid) or mercury thermometer. Bi-metal (dial) and digital thermometers (from other weather stations) are not a good source and have their own margin of error. Local weather stations are poor references due to variations in location and timing.

Steps:

Place the sensor in a shaded, controlled environment next to the fluid

thermometer, and allow the sensor to stabilize for 48 hours. Compare this temperature to the fluid thermometer and adjust the console to match the fluid thermometer.

(2) Humidity Calibration

Potential Errors:

Humidity is a difficult parameter to measure electronically and drifts over time due to contamination. Location (e.g., installed over dirt vs. lawn) also affects humidity readings.

Calibration Method:

Official stations recalibrate or replace humidity sensors annually. Due to manufacturing tolerances, humidity accuracy is typically ±5%. To improve accuracy, the indoor and outdoor humidity can be calibrated using an accurate source, such as a sling psychrometer.

(3) Barometer Calibration

Types of Pressure:

The display console shows two different types of pressures: absolute (measured) and relative (corrected to sea-level).

Calibration Method:

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 is generally higher than your measured pressure.

Thus, your absolute pressure may read 28.62inHg (969mb) at an altitude of 1000 feet (305 m), but the relative pressure is 30.00inHg (101mb).

The standard sea-level pressure is 29.92inHg (1013mb). This is the average sea-level pressure around the world. Relative pressure measurements

greater than 29.92inHg (1013mb) are considered high pressure and relative pressure measurements less than 29.92inHg are considered low pressure.

Find an official reporting station (using sites like Weather.gov, Weather.com or Wunderground.com), and set your weather station to match the official reporting station.

(4) Wind Direction Calibration

When to Calibrate:

This is only needed if the weather station sensor array was installed incorrectly and is not aligned to true north.

Calibration Steps:

Use a GPS or compass to properly align the sensor to true north, ensuring accurate wind direction readings.

Note: If located in southern hemisphere, please follow the steps to calibrate the wind direction:

1. Install the outdoor sensor package with the West arrow on the sensor pointing due East.
2. Check the wind direction offset (Default: equals to the current wind direction)

If:

Current wind direction offset < 180, then it should be calibrated to be:current wind direction + 180

If:

Current wind direction offset > 180, then it should be calibrated to be:current wind direction - 180

For example, if the current wind direction is 288, then you'll need to set the wind direction offset to 288-180=108.

If the current wind direction is 12, then you'll need to set the wind direction offset to be: 12+180=192.

(5) Wind Speed Calibration

Potential Errors:

Wind speed measurements are highly sensitive to installation constraints. The general rule is that the distance from the tallest obstruction should be 4 times the obstruction's height. For example, if your house is 20ft(6.10m) tall and you mount the sensor on a 5ft or 1.52m pole:

Distance = 4 x (20 –5)ft = 60ft or =4 x (6.10-1.52)=18.32m.

Calibration Method:

Many installations are not perfect and installing the weather station on a roof can be difficult. Thus, you can use a calibrated wind meter (not included) and a constant-speed, high-speed fan to adjust wind speed readings. Over time, wear on the wind cup bearings may also affect accuracy.

(6) Rainfall Calibration

Factory Calibration:

The rain collector is calibrated at the factory based on the funnel diameter. The bucket tips every 0.01 inch(or 0.1m) of rainfall (referred to as resolution).

Calibration Method:

Compare the accumulated rainfall with a sight glass rain gauge that has an aperture of at least 4 inches (or 0.1m). Make sure to periodically clean the rain gauge funnel to ensure accurate measurements.

5.5 Backlight

5.5.1 When DC powered:

The backlight remains continuously on only when the device is powered by DC. If the DC is disconnected, the backlight can be temporarily activated.

Press the LIGHT SNOOZE button to adjust the brightness levels: High, Low, and Off.

5.5.2 When only batteries powered:

The brightness cannot be adjusted, and stops sending data to the Internet, and will turn off automatically after 15 seconds of inactivity to reduce power consumption. Pressing the LIGHT SNOOZE button will activate the backlight at High brightness.

5.6 Historical Data Export and Clear

5.6.1 Export History Data

WS2910 doesn't support a memory card to store data, when the Wi-Fi configuration (refer to **Section 4.3**) is completed, you can log in to Ecowitt.net to export the data in **xlsx** file format.

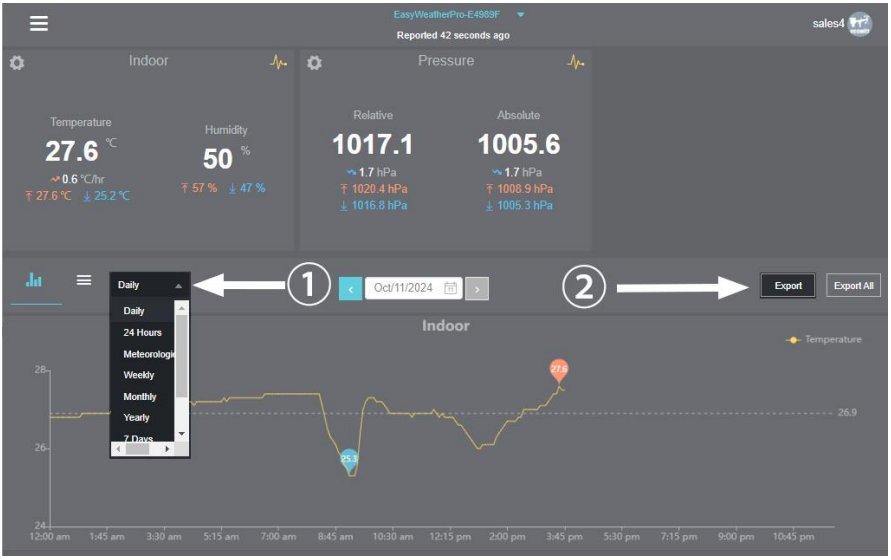


Figure 38

Note:

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

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

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

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

5.6.2 Clear History Data

Under "menu" → "Devices" → "..." →"Sure".

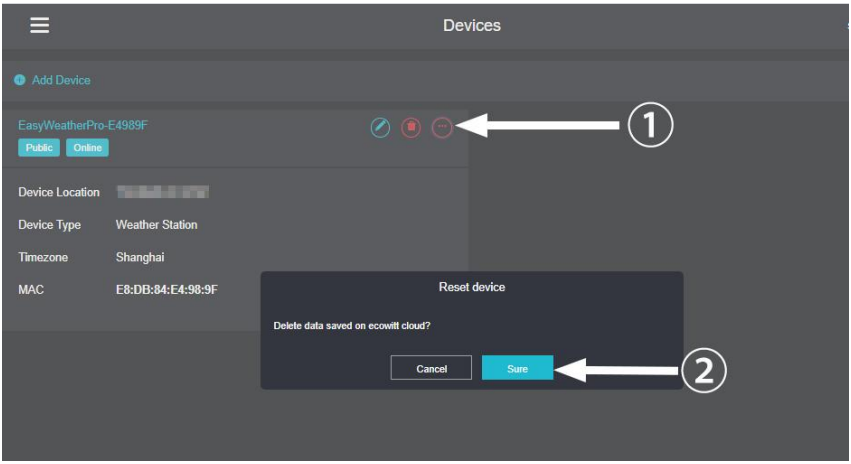


Figure 39

5.7 Wi-Fi Firmware Upgrade

5.7.1 Via Ecowitt App

Open Ecowitt App → My Devices →"…" (Open the Edit Gateway page) → tap the firmware version number to upgrade if there is a new version available.

5.7.2 Via WebUI 192.168.4.1

Or choose "Automatically upgrade firmware" on the WebUI 192.168.4.1(refer to Section 4.3.2 to access).

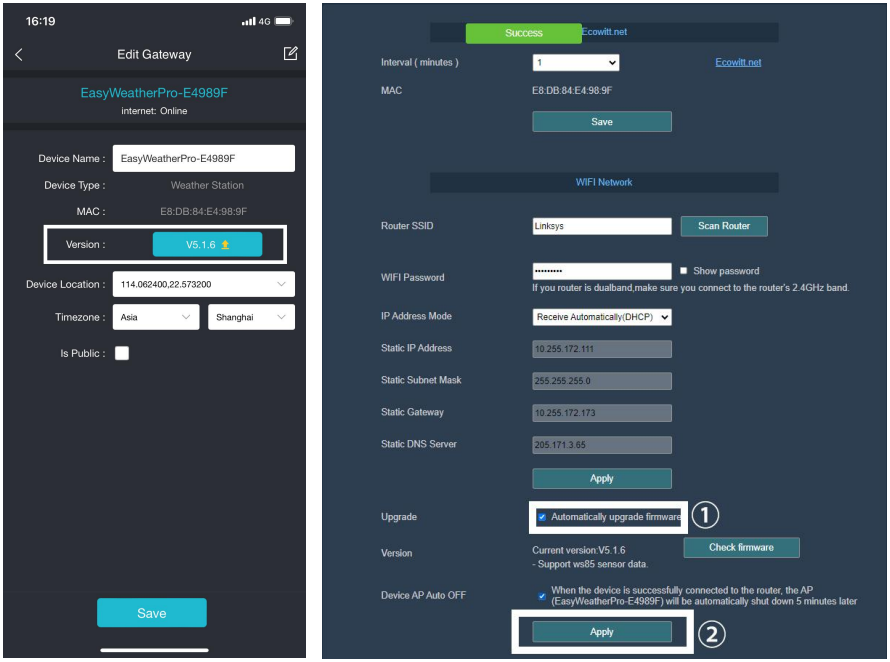


Figure 40

6. Optional Sensors

The RF reception function will always be turned on to receive data from multiple sensors at any time.

When powered by DC or batteries, the device supports these sensors as below, power consumption can be high if only battery power is available.

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

Note: Max QTY of the following table means the maximum number of different sensors that can be connected to the WS2910.

6.1 Sensor Data Can be Displayed on the WS2910

Sensor Model	Max QTY	Picture	Functions
WS69	1		Outdoor temperature & humidity, light, UV, wind speed/direction, rainfall

Table 8

6.2 Sensor Data Can Only be Uploaded to the Cloud

Sensor Model	Max QTY	Picture	Functions
WN31	8		Temperature and humidity
WN30			Temperature
WN36			Pool temperature
WH41	1		PM2.5
WH43	1		PM2.5

Table 9

7. Specifications

Model	WS2910
Name	Weather Station Display Console
Dimensions	188 x 127.2 x 21mm
Screen Size	156.7 x 76.2mm
Material of Plastic Casing	ABS
Material of Screen	HTN-LCD
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 to 1100 hPa(8.85 to 32.5 inHg)
Barometric pressure accuracy	±5 hPa
Barometric pressure resolution	0.1 hPa (0.01 inHg)
Alarm duration	120s
Sensor reporting interval	60s
RF Connection Frequency	915/868/433MHz (depending on local regulations)
RF Wireless Range	Over 100 meters (in open areas)
WLAN	802.11 b/g/n 2.4 GHz (802.11n, Max 150 Mbps)
WLAN Range	Over 30 meters (in open areas)
Console Operating Temperature	-10°C to 50°C (14°F to 122°F)
Power Supply	5V DC adaptor (not included), Power Consumption: 0.5 Watts (1.25 Watts during Wi-Fi configuration mode) Or 3 x AAA batteries (not included)
Battery Life	6 Months

Table 10

Note: When working with other transmitters, the screen displays the following range of data:

Indoor Temperature	-10 to 60°C
Barometric Pressure	300 to 1100 hPa
Outdoor Temperature	-40 to 60°C
Humidity	1% to 99%
Wind Speed	0 to 180km/h
Wind Direction	0 to 359 degrees
Rainfall	0 to 9999mm
UVI	0 to 15
Light	0 to 300Klux

Table 11

8. Troubleshoot

Problems	Solution
Intermittent problems with outdoor sensor reception on console	1. Ensure the sensor is within the transmission range. 2. Ensure no metal or natural barriers between the sensor and console, and avoid electrical interference. 3. Install fresh batteries in the outdoor sensor array and console. Use lithium for cold weather. Reset the sensor, check if the outdoor LED flashes every 16 second, and resynchronize with console.
Indoor temperature readings too high in the day/night time	Ensure the display console is placed indoors, away from direct sunlight, radiative heating, and convective heating.
Indoor and outdoor temp & humidity show differing readings when tested indoors	1. Test both the console and outdoor unit in the same room. 2. Wait up to one hour for the sensors to stabilize. 3. Temperature readings should match

	within 4°F (±2°F accuracy), and humidity readings within 10% (±5% accuracy). 4. If they don't match, use calibration offsets to adjust (see Section 5.4.5.2).
Relative pressure does not agree with official reporting station	1. Relative pressure refers to sea-level equivalent temperature and should match official station readings closely. 2. Ensure you're not viewing absolute pressure, especially if your station is far from sea level. Check readings at different times due to possible delays in official updates. 3. If discrepancies occur, recalibrate the pressure as outlined in Section 5.4.5.2 4. The barometer is only accurate to ±5 hPa within the following relative pressure range of 300 to 1,100 hPa, corresponding to altitudes from 6,015 m above sea level(at 300 hPa) to about 730 m below sea level(at 1,100 hPa). 5. At higher altitudes, expect lower accuracy and potential non-linear errors; calibration offsets may offer limited correction.
Data not reporting to Wunderground.com	1. Ensure your Station ID and Station Key are correct. 2. Ensure the date and time is correct on the console. If incorrect, you may be reporting old data, not real time data. 3. Ensure your time zone is set properly. If incorrect, you may be reporting old

	data, not real time data.
No Wi-Fi connection	1. Check for Wi-Fi symbol on the display, it should be always on. 2. Make sure you connect to 2.4G band but not 5G band of your Wi-Fi router. 3. Make sure you configured the correct SSID and password. Repeat the procedure if necessary to verify.

Table 12

9. Warranty

9.1 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 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.

9.2 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

10. Care and Maintenance

When batteries of different brand or type are used together, or new and old batteries are used together, some batteries may be over-discharged due to a difference of voltage or capacity. This can result in venting, leakage, and rupture and may cause personal injury.

- Do not mix Alkaline, Lithium, standard, or rechargeable batteries.
- Always purchase the correct size and grade of battery most suitable for the intended use.
- Always replace the whole set of batteries at one time, taking care not to mix old and new ones, or batteries of different types.
- Clean the battery contacts and also those of the device prior to battery installation.
- Ensure the batteries are installed correctly with regard to polarity (+ and -).

• Remove batteries from product during periods of non-use. Battery leakage can cause corrosion and damage to this product.
• Remove used batteries promptly.
• For recycling and disposal of batteries, and to protect the environment, please check the internet or your local phone directory for local recycling centers and/or follow local government regulations

11. Contact Us

11.1 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.

11.2 Stay in Touch

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