

# Professional 4G Cellular Weather Station

## Operation Manual

Model: WS6006



**Note:** The stainless steel pole is not included

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# 1 Introduction

Thank you for purchasing this professional weather station. This device is working based on 4G WCDMA /GSM network. It can be configured to send data to a specified server by WCDMA/GSM so that users can run remote monitoring of weather condition.

This manual will guide you step-by-step through setting up your device. Use this manual to become familiar with your professional weather station, and save it for future reference.

The device can measure the below weather data and transmit them to the public weather server: [www.wunderground.com](http://www.wunderground.com) by 4G WCDMA/GSM network.

- |   |  |
|---|--|
| <b>1. Wind direction</b>                              | <b>8. Indoor Temperature</b>                                 |
| <b>2. Wind speed</b>                                  | <b>9. Indoor Humidity</b>                                    |
| <b>3. Solar radiation rate</b>                        | <b>10. Outdoor Temperature</b>                               |
| <b>4. UV index</b>                                    | <b>11. Outdoor Humidity</b>                                  |
| <b>5. Absolute pressure</b>                           | <b>12. Dew point</b>   |
| <b>6. Relative pressure</b>                           | <b>13. Rain fall</b>   |
| <b>7. Gust</b>  | <b>14. PM 2.5 concentration<br/>(Sensor sold separately)</b> |
| <b>15. Soil moisture<br/>(Sensor sold separately)</b> |  |

## 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	Receiver unit
1	Outdoor Sensor Body with built-in: Thermo-hygrometer / Rain Gauge / Wind Speed Sensor/ Wind Direction Sensor, Light and UV sensor, Solar panel
1	Wind speed cups (to be attached to outdoor sensor body)
1	Wind vane (to be attached to outdoor sensor body)
2	U-Bolts for mounting on a pole
4	Threaded nuts for U-Bolts (M5 size)
1	Metal mounting plate to be used with U-Bolts
1	Wrench for M5 bolts
1	Solar panel
1	Metal mounting plate to be used with solar panel
1	Mounting hose clamp to be used with solar panel
1	Indoor temperature & humidity sensor
1	USB cable
1	5 meter connection cable for solar panel to connect to Receiver
1	18650 li-ion battery for receiver unit
1	User manual

If components are missing from the package, or broken, please contact customer service to resolve the issue.

**Note:** The receiver unit can store historical data on a memory card. This memory card is not included. If you want to use one you will need a TF memory card.

**Note:** Batteries for the outdoor sensor package are not included. You will need 2 AA size batteries, alkaline or Lithium batteries (Lithium recommended for colder climates).

**Note:** The receiver unit is powered by a 18650 li-ion battery or USB charger. And also with a solar panel as backup power supply. All included.

**Note:** When select the SIM card, please check the following supported frequency band first (you may confirm that with your mobile network service provider):

**North America:**

LTE-FDD: B2/B4/B5/B12/B13/B17/B25/B26

LTE-TDD:B41

WCDMA:B2/B4/B5

CDMA&EVDO:BC0/BC1

GSM:850/900/1800/1900

**Europe:**

LTE-FDD: B1/B3/B5/B7/B8/B20

LTE-TDD:B40

WCDMA:B1/B5/B8

GSM:850/900/1800/1900

**Australia:**

LTE-FDD:B1/B3/B5/B7/B8/B28

LTE-TDD:B40

WCDMA:B1/B5/B8

GSM:850/900/1800/1900

**South America:**

LTE-FDD: B3/B4/B5/B7/B8/B28

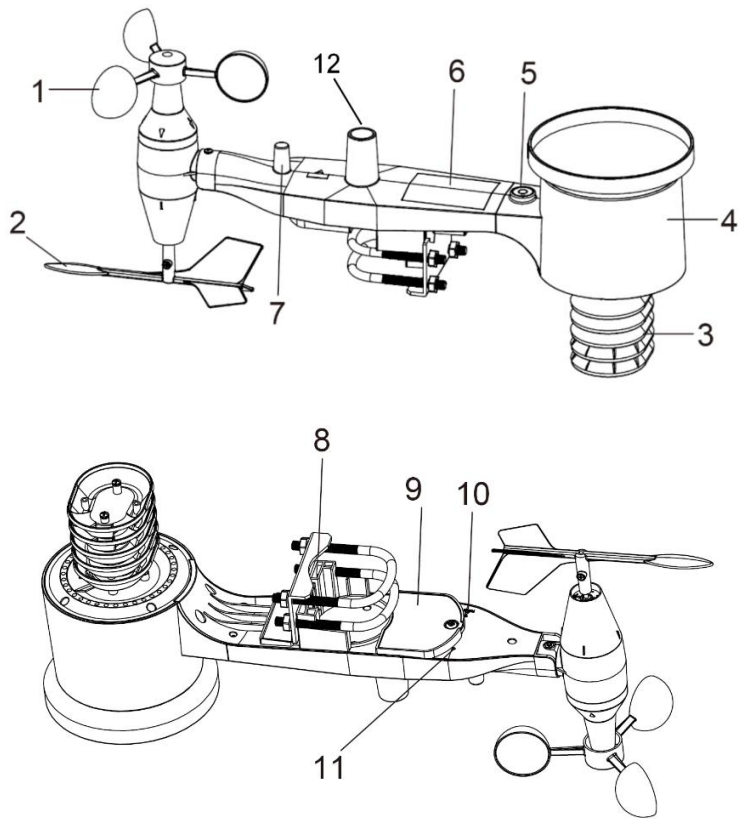
LTE-TDD:B40

WCDMA:B2/B5/B8

GSM:850/900/1800/1900

# 3 OVERVIEW

## 3.1 Outdoor 7-in-1 sensor array:

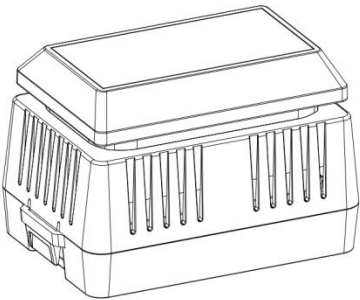


1. Wind Speed cups	7. Antenna
2. Wind Vane	8. U-Bolts
3. Thermo- and hygro-meter sensors	9. Battery compartment door
4. Rain collector	10. Reset button
5. Bubble level	11. LED (red) to indicate data transmission
6. Solar panel	12. Light sensor and UV sensor

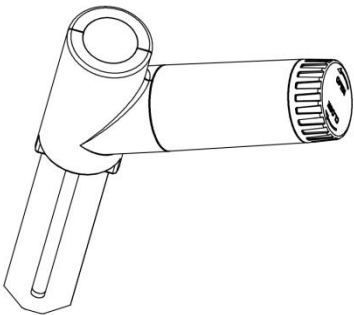
**3.2 Indoor sensor:**



**3.3 PM 2.5 Sensor (Sold separately):**



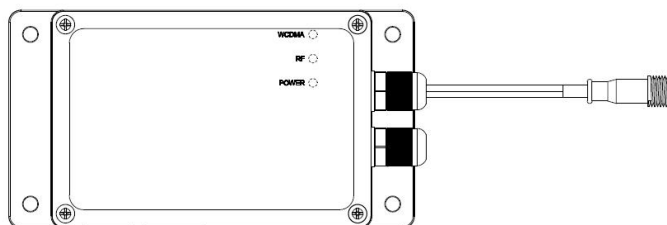
**3.4 Soil Moisture Sensor(Sold separately):**



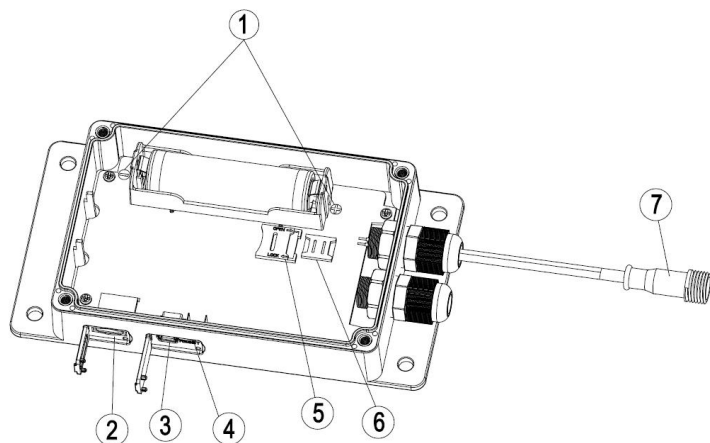


## 3.5 Receiver unit

### Outside



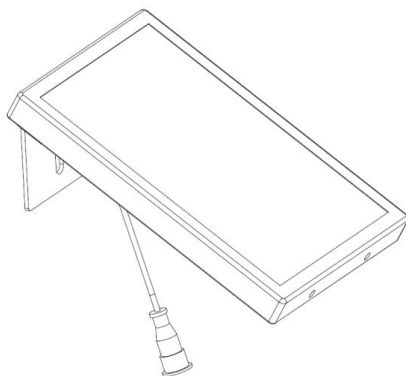
### Inside



1. +/- electrode symbol of battery
2. TF card slot
3. USB interface
4. Reset button
5. Micro SIM card slot
6. Nano SIM card slot
7. Connector for solar power unit

### 3.6 Solar panel Unit

The solar panel base is to be connected to the power connector for receiver via a 2 core 5 meter extending cable.



### 3.7 Features

Receive the following weather data from outdoor integrated sensor:

- Indoor/Outdoor temperature and humidity
- Wind speed, gust speed, and wind direction
- Absolute and Relative barometric pressure
- Rainfall rate and totals for day, week, month, year and life-time total
- Calculated wind chill, dew point and heat index
- Solar light intensity and UV index
- Selectable display units for each sensor: C or F (temperature); mph, km/h, m/s, knots or Beaufort (wind speed); inHg, hPa or mmHg (pressure); in or mm (rainfall); lux, fc or w/m<sup>2</sup> (solar lighting)
- Maximum and minimum values for sensors
- High/low alarm options for sensors

- Can be configured with WH41 PM 2.5 air quality sensor and WH51 soil moisture sensor (all sold separately)
- Data preserved during battery change
- PC software (USB connection)
- Send alarm message to mobile by SMS
- The data saved as CSV file on the SD card
- Transmission span time is programmable by user from 0 or 10minute to 24hour (0 is not send the data via WCDMA network)
- 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 Wunderground protocol.
- Data storage service on Ecowitt server: <https://ecowitt.net>
- Stores data for past six months at 5-minute intervals
- Stores data for past year at 30-minute intervals

Note: If you purchased the optional WH51/WH41 sensors, please go to our website to download the instruction manual:

<https://www.ecowitt.com/shop/manualDownload>

## 4 Installation

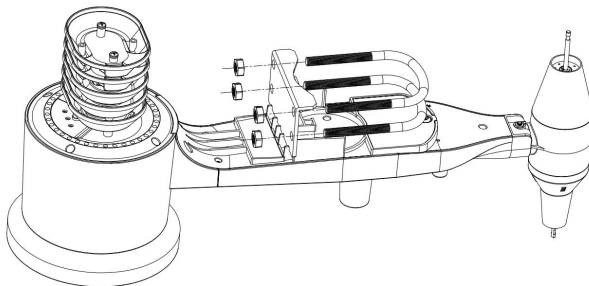
Before placing and installing all components of the weather station at their final destination, please set up the weather station with all parts being nearby for testing the correct function. Also please note configuring parameters on PC software is necessary before permanent installation. (Refer to USB Configure Tool Operation part).

To complete assembly you will need a Philips screwdriver (size PH2) , a Slotted screwdriver (size SL2) and a wrench (size M5; included in package).

### 4.1 Outdoor unit

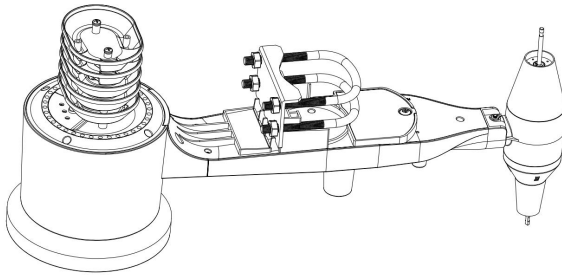
#### 4.1.1 Install U-bolts and metal plate

Installation of the U-bolts, which are in turn used to mount the sensor package on a pole, requires installation of an included metal plate to receive the U-bolt ends. The metal plate, visible in Figure 1 on the right side, has four holes through which the ends of the two U-Bolts will fit. The plate itself is inserted in a groove on the bottom of the unit (opposite side of solar panel). Note that one side of the plate has a straight edge (which goes into the groove), the other side is bent at a 90-degree angle and has a curved profile (which will end up “hugging” the mounting pole). Once the metal plate is inserted, remove nuts from the U-Bolts and insert both U-bolts through the respective holes of the metal plate as shown in Figure 1.



**Figure1: U-Bolt installation**

Loosely screw on the nuts on the ends of the U-bolts. You will tighten these later during final mounting. Final assembly is shown in Figure 2.

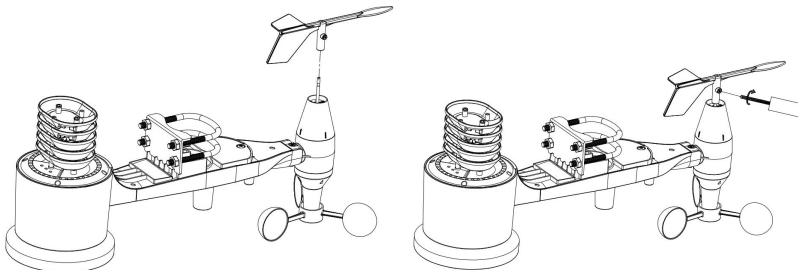


**Figure 2: U-Bolts and nuts installed**

The plate and U-Bolts are not yet needed at this stage but doing this now may help avoid damaging wind vane and wind speed cups later on. Handling of the sensor package with wind vane and speed cups installed to install these bolts is more difficult and more likely to lead to damage.

#### **4.1.2 Install wind vane**

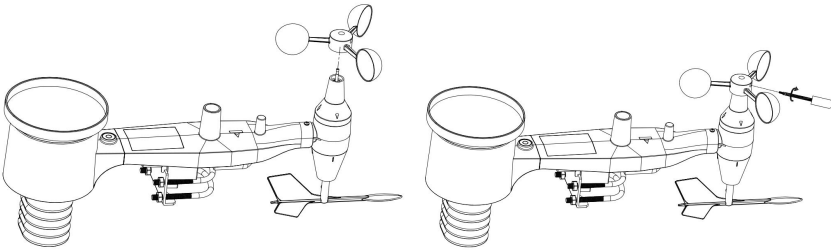
Push the wind vane onto the shaft on the bottom side of the sensor package, until it goes no further, as shown on the left side in Figure 3. Next, tighten the set screw, with a Philips screwdriver (size PH2), as shown on the right side, until the wind vane cannot be removed from the axle. Make sure the wind vane can rotate freely. The wind vane's movement has a small amount of friction, which is helpful in providing steady wind direction measurements.



**Figure 3: Wind vane installation diagram**

### 4.1.3 Install wind speed cups

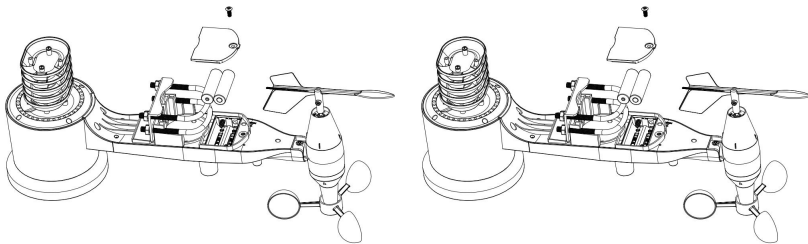
Push the wind speed cup assembly onto the shaft on the opposite side of the wind vane, as shown in Figure 4 on the left side. Tighten the set screw, with a Philips screwdriver (size PH2), as shown on the right side. Make sure the cup assembly can rotate freely. There should be no noticeable friction when it is turning.



**Figure 4: Wind speed cup installation diagram**

### 4.1.4 Install batteries in sensor package

Open the battery compartment with a screwdriver and insert 2 AA batteries in the battery compartment. The LED indicator on the back of the sensor package (item 9) will turn on for four seconds and then flash once every 16 seconds indicating sensor data transmission. If you did not pay attention, you may have missed the initial indication. You can always remove the batteries and start over, but if you see the flash once every 16 seconds, everything should be OK.



**Figure 5: Battery installation diagram**

**Note:** If no LED light up or is lighted permanently, make sure the battery is inserted the correct way or a proper reset is happened. Do not

install the batteries backwards. You can permanently damage the outdoor sensor.

**Note:** We recommend lithium batteries for cold weather climates, but alkaline batteries are sufficient for most climates. We do not recommend rechargeable batteries. They have lower voltages, do not operate well at wide temperature ranges, and do not last as long, resulting in poorer reception.

## **4.1.5 Mount assembled outdoor sensor package**

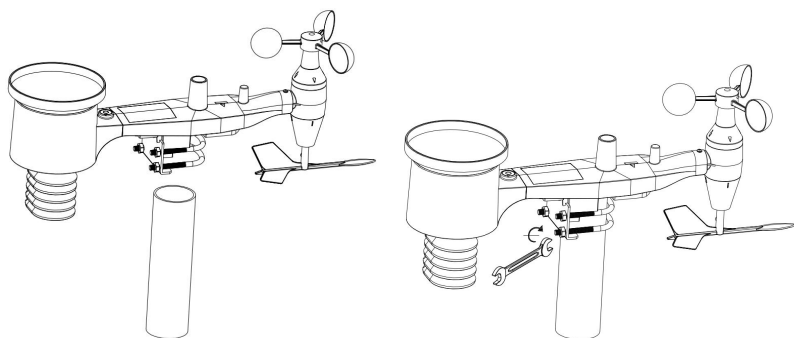
### **4.1.5.1 Before you mount**

Before proceeding with the outdoor mounting detailed in this section, you may want to skip to setup instructions in section **Indoor Sensor Set Up** (Section 4.2) and onwards first, while you keep the assembled outdoor sensor package nearby (although preferably not closer than 5 ft. from the receiver unit). This will make any troubleshooting and adjustments easier and avoids any distance or interference related issues from the setup.

After setup is complete and everything is working, return here for outdoor mounting. If issues show up after outdoor mounting they are almost certainly related to distance, obstacles etc.

### **4.1.5.2 Mounting**

You can attach a pipe to a permanent structure and then attach the sensor package to it (see Figure 6). The U-Bolts will accommodate a pipe diameter of 1-2 inches (pipe not included).



**Figure 6: Sensor package mounting diagram**

Make sure the mounting pipe is vertical, or very close to it. Use a level if needed.

Finally, place the sensor package on top of the prepared mounting pipe. The U-Bolts should be loose enough to allow this but loosen the nuts as necessary. Once placed, hand tightens all four nuts, taking care to do so evenly. Do not use a wrench yet!

Now you will need to align the whole package in the proper direction by rotating it on top of the mounting pipe as needed. Locate the arrow labeled “WEST” that you will find on top of the sensor package right next to the light sensor, on the opposite side of the solar panel. You must rotate the whole sensor package until this arrow points due west. To achieve proper alignment, it is helpful to use a compass (many cell phones have a compass application). Once rotated in the correct orientation, lightly tighten the bolts a little more (use a wrench) to prevent further rotation.

**Note:** The orientation to WEST is necessary for two reasons. The most important one is to position the solar panel and light sensor in the most advantageous position for recording solar radiation and charging internal capacitors. Secondly it causes a zero reading for wind direction to correspond to due NORTH, as is customary. This orientation is correct for installations in the northern hemisphere. If you are installing in the southern hemisphere, the correct orientation to achieve the same optimal positioning is to have the “WEST” arrow actually point due



EAST! This has the side effect, however, of lining up the 0 reading of the wind direction with SOUTH. This needs to be corrected using a 180-degree offset in the calibration settings (see section **Calibration**).

Now look at the bubble level. The bubble should be fully inside the red circle. If it is not, wind direction, speed, and rain readings may not operate correctly or accurately. Adjust the mounting pipe as necessary. If the bubble is close, but not quite inside the circle, and you cannot adjust the mounting pipe, you may have to experiment with small wooden or heavy cardboard shims between the sensor package and the top of the mounting pole to achieve the desired result (this will require loosening the bolts and some experimentation).

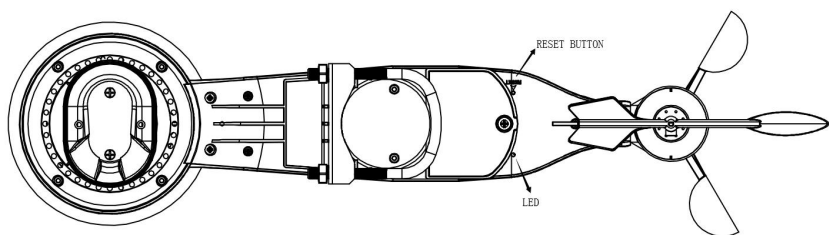
Make sure you check, and correct if necessary, the westerly orientation as the final installation step, and now tighten the bolts with a wrench. Do not over tighten, but make sure strong wind and/or rain cannot move the sensor package.

**Note:** If you tested the full assembly indoors and then came back here for instructions and mounted to sensor package outdoor you may want to make some further adjustments on the receiver unit. The transportation from indoor to outdoor and handling of the sensor is likely to have “tripped” the rainfall sensing bucket one or more times and consequently the receiver unit may have registered rainfall that did not really exist. You can use pc software to clear this from history. Doing so is also important to avoid false registration of these readings with weather services.

#### **4.1.6 Reset Button and Transmitter LED**

In the event the sensor array is not transmitting, reset the sensor array.

Using a bent-open paperclip, press and hold the RESET BUTTON (see Figure 7) to affect a reset: the LED turns on while the RESET button is depressed, and you can now let go. The LED should then resume as normal, flashing approximately once every 16 seconds.

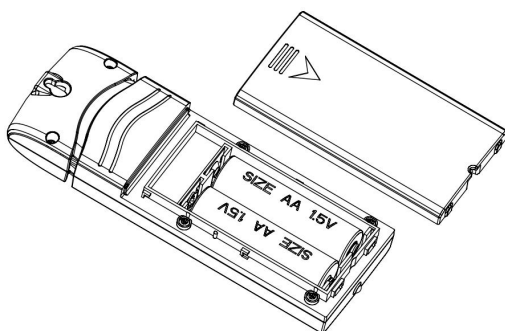


**Figure 7: Reset button and Transmitter LED location**

## 4.2 Indoor Sensor Set Up

**Note:** To avoid permanent damage, please take note of the battery polarity before inserting the batteries. Looking at Figure 8 from left to right the left-most (or bottom) battery is to be installed with its + terminal pointing down, and the other battery with its + terminal pointing up.

Remove the battery door on the back of the sensor by sliding it in the direction of the arrow. Insert two AA batteries as described and put compartment door back and slide it in the opposite direction to lock.



**Figure 8: Indoor sensor battery installation**

### 4.2.1 Sensor Placement

The best mounting location for the indoor sensor is in a location that never receives direct sunlight, not even through windows. Also, do not install in a location where a nearby radiant heat source (radiator, heaters,

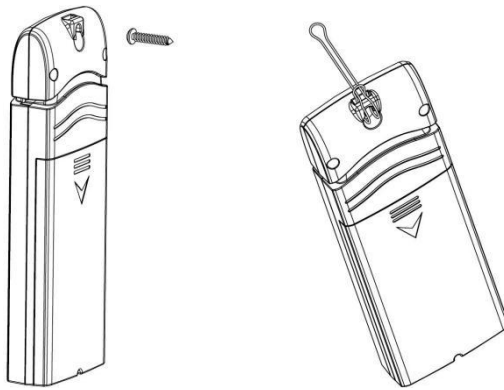
etc.) will affect it. Direct sunlight and radiant heat sources will result in inaccurate temperature readings.

The sensor is meant to provide indoor conditions for display on the console, but if you would rather have a second source for outdoor conditions instead, you can mount this unit outside. The unit is weatherproof, but besides heeding the placement instructions above, you should also attempt to mount the unit under cover (eave or awning or similar).

To mount or hang the unit on a wall or wood beam:

Use a screw or nail to affix the remote sensor to the wall, as shown on the left side of Figure 9, or

Hang the remote sensor using a string, as shown in right side of Figure 9



**Figure 9: Indoor sensor mounting**

**Note:** Make sure the sensor is mounted vertically and not lying down on a flat surface. This will insure optimum reception. Wireless signals are impacted by distance, interference (other weather stations, wireless phones, wireless routers, TVs and computer monitors), and transmission barriers, such as walls. In general, wireless signals will not penetrate solid metal and earth (down a hill, for example).

### 4.3 Best Practices for Wireless Communication

Wireless (RF) communication is susceptible to interference, distance, walls and metal barriers. We recommend the following best practices for trouble free wireless communication between both sensor packages and the console:

- **Indoor sensor placement:** The sensor will have the longest reach for its signal when mounted or hung vertically. Avoid laying it down on a flat surface.
- **Electro-Magnetic Interference (EMI).** Keep the console several feet away from computer monitors and TVs.
- **Radio Frequency Interference (RFI).** If you have other devices operating on the same frequency band as your indoor and/or outdoor sensors and experience intermittent communication between sensor package and console, try turning off these other devices for troubleshooting purposes. You may need to relocate the transmitters or receivers to avoid the interference and establish reliable communication. The frequencies used by the sensors are one of (depending on your location): 433, 868, or 915 MHz (915 MHz for United States).
- **Line of Sight Rating.** This device is rated at 300 feet line of sight (under ideal circumstances; no interference, barriers or walls), but in most real-world scenarios, including a wall or two, you will be able to go about 100 feet.
- **Metal Barriers.** Radio frequency will not pass through metal barriers such as aluminum siding or metal wall framing. If you have such metal barriers and experience communication problems, you must change the placement of sensor package and or console.

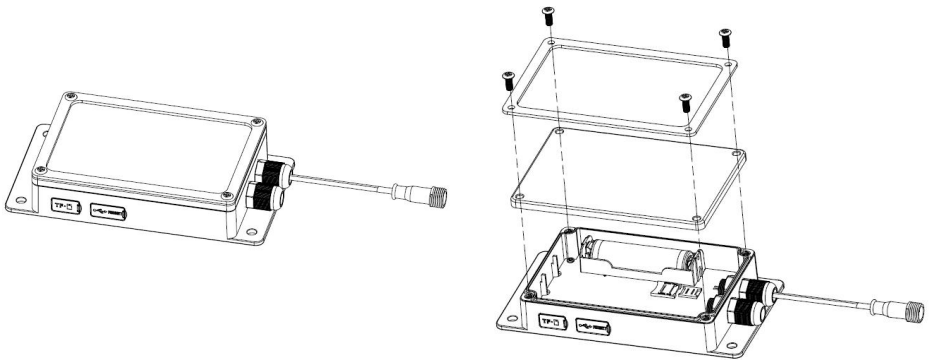
The following table shows different transmission media and expected signal strength reductions. Each “wall” or obstruction decreases the transmission range by the factor shown below.

Medium	RF Signal Strength Reduction
Glass (untreated)	5-15%
Plastics	10-15%
Wood	10-40%
Brick	10-40%
Concrete	40-80%
Metal	90-100%

**Table 1: RF Signal Strength reduction**

## 4.4 Initial Receiver Unit Set Up

1. Before power on the device, please open the case (Figure 10) and use a 3G SIM card to install in one of the SIM card slots. (Figure 11).The Bigger slot is for micro SIM card and the other is for Nano SIM card.

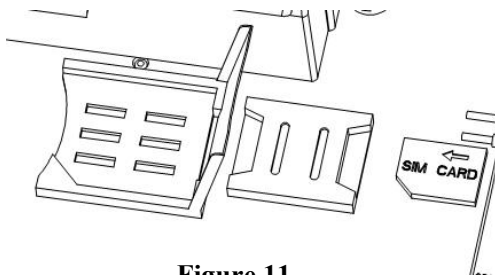


**Figure 10**

### **Micro SIM card slot:**

1. Unfold the foil of Micro sim card slot
2. Put the SIM card into the compartment.
3. Cover the foil and lock the slot.

**Nano SIM card slot:** Insert the sim card into slot directly as shown in Figure 11.

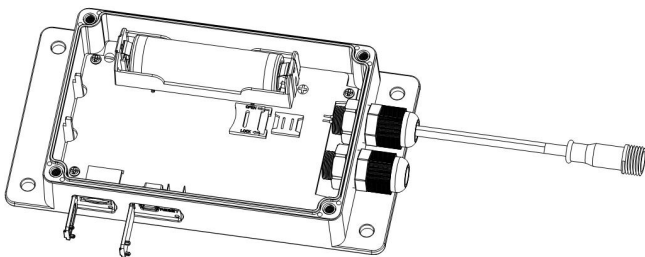


**Figure 11**

**Note:** The SIM card must support SMS and mobile data. SIM card lock must be disabled. Prepaid SIM cards are not recommended, as data will not be uploaded when you run out of credit.

**Note:** Please install only 1 SIM card to work.

2. Open the rubber seal on Micro SD card slot and install a Micro SD card. (Figure 12)



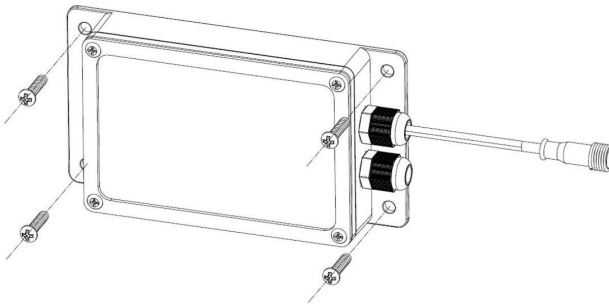
**Figure 12**

3. Install the supplied li-ion battery into the battery chamber. Do not install the batteries incorrect to the polarity markings. You can permanently damage the receiver.

The battery must be full charged before you set up the receiver unit. To charge the battery, Open the rubber seal on USB interface and connect the receiver to PC or an USB charger via USB cable. Charge the battery

for 10 hours when first use take place, this is to assure battery is fully charged.

4. Re-assemble the receiver and fix it on wall or vertical surface with flat wooden board. Please keep the side with micro SD card slot and USB interface downward to make sure waterproof. If fix on wall directly, please use an electrical drill to bore sizeable holes and insert the plastic inserts before you mount screws.

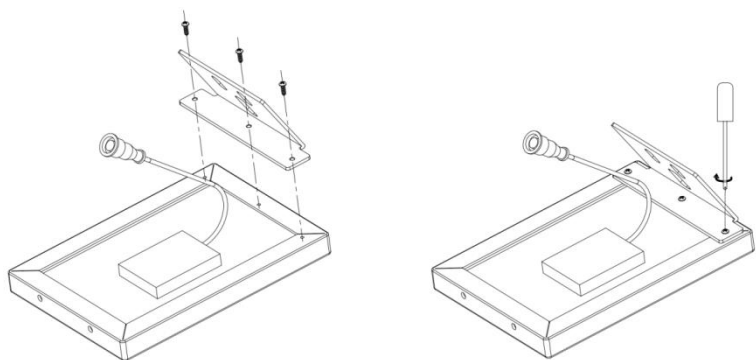


Mount the solar panel unit.

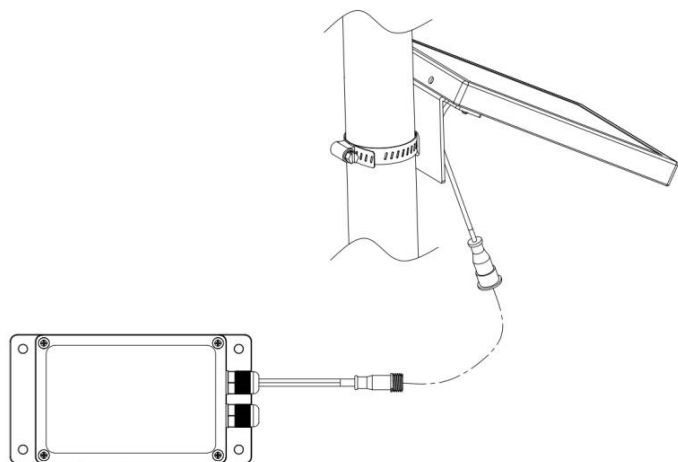
Please mount it near the receiver for extending cable between solar unit and receiver is only 5 meters. There are a metal holder, 3 screws and 1 steel mounting loop included for solar panel mount.

Mounting Steps:

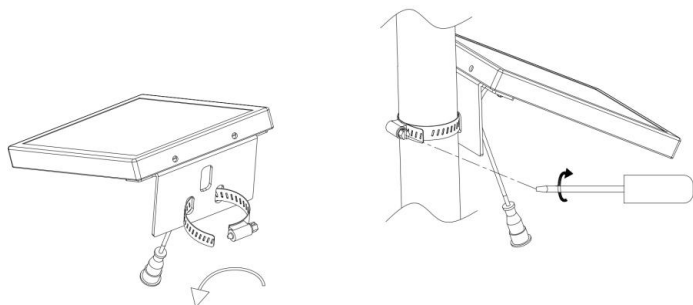
- a) Use a screw driver to assemble the metal holder on back of solar panel as shown in Figure 13.
- b) There are 2 slots on the metal holder for steel loop. Attach the loop to the metal holder as shown in Figure 14.
- c) Fix the loop on a mounting post and as shown in Figure 15. Make sure solar panel unit face sunlight.
- d) Connecting the solar panel to receiver unit. A 5 meter extending cable is for option to extend the distance.



**Figure 13**



**Figure 14**



**Figure 15**



5. All LED lights will be light up after power on:

WCDMA/GSM network indicator: Once the device is establishing the connection to internet, it will turn on and flash .The flash indicating data is uploading to website in a certain interval.(Set up on PC software).

Receiver switches between WCDMA and GSM automatically based on network availability.

Quick flash in every 2 seconds means failure deliver. Please check the network availability or the battery.

RF Data collecting indicator: It will flash when receive data from outdoor sensor or indoor sensor.

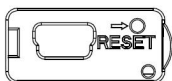
Quick flash in every 2 seconds means failure communication between indoor/outdoor sensor and receiver unit. Please check weather station and re-establish the RF communication.

Power indicator: It flashes every 3 seconds during working.

Stop flashing means power failure. Please check battery.

6. Time and date will be synchronized with internet after start up.

7. Open the rubber seal on there is a RESET button beside the USB interface. Use a clipper pin to push and trigger a complete reset.



## 5 USB Configure Tool Operation

Before using the weather station, you need to configure the settings on the PC via” **WEATHER LOGGER**” pc software.

1. Download the latest pc software on this link:  
<http://download.ecowitt.net/down/software?n=WeatherLogger>
2. Decompress the Weather Logger file, open the Weather Logger Setup.exe to install the software.
3. Connect the receiver device to PC via an USB cable, and launch the software.

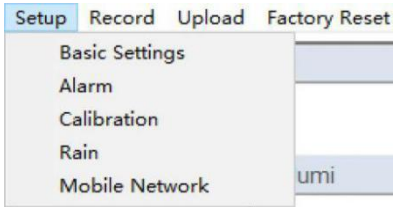
When base unit is connected to PC, it shows “USB Connected” at the bottom of screen. If no base station is connected, it shows "USB Unconnected".

The main software UI is as follow:

Weather Logger			
Setup Record Upload Factory Reset			
InTemp	InHumi	OutTemp	OutHumi
27.2 °C	64 %	26.2 °C	67 %
AbsBaro	RelBaro	DewPoint	WindChill
1003.8 hpa	912.8 hpa	19.6 °C	26.2 °C
HeatIndex	Wind Direction	Wind	Gust
26.2 °C	139 °	0.0 m/s	0.0 m/s
RainHour	RainDay	RainWeek	RainMonth
15.2 mm	15.2 mm	15.2 mm	15.2 mm
RainYear	RainTotal	RainEvent	RainRate
15.2 mm	15.2 mm	15.2 mm	91.2 mm/h
Light	UVI	Soil Moisture	PM2.5
0.0 lux	0	0 %	25.0 ug/m3
Firmware Ver		Time	
1.0.28		2018-04-25 10:34:57	
Connected		3G	

# 5.1 Setup Menu

Click **Setup** menu, there are **Basic settings, Alarm, Calibration, Rain, Mobile Network** options.



# 5.2 Basic Settings

Click **Basic Settings** option to enter setting menu. Units of weather parameters, time zone, DST on/off, data logging interval can be configured here. Once you made your choice, press Save to make the setting effective.

Setting ×

Unit

Temperature °C Light lux Wind m/s

Pressure hpa Rain mm

Time

TimeZone (UTC-10:00)Aleutian Islands

☒ Automatically adjust clock for daylight saving time

Data Logger Interval

2 Minute

Device Info

Outdoor sensor wh65 ID: 26

Indoor sensor wh30 ID: F1

Soil sensor: wh51

PM2.5 sensor: wh41 ID: C9

Frequency 915MHz

Device Name

3G WEATHER STATION

Save

Cancel

*Note: Whenever any one of the settings changed, a new log file will be created on SD card (in case a card has mounted on machine) and having history data recorded with the newly selected units effected.*

## 5.3 Alarm

Alarm function is referring to sending alert SMS message to your mobile phone when alarm condition is triggered.

Click **Alarm** option to enter setting menu. The check box is to enable the corresponded alarm condition.

Alarm settings window showing High Alarm and Low Alarm configurations. The High Alarm section includes settings for Indoor Temp (25.0 °C), Indoor Humi (65 %), Outdoor Temp (25.0 °C), Outdoor Humi (65 %), DewPoint (25.0 °C), Wind (10.0 m/s), Gust (10.0 m/s), RainRate (10.0 mm/h), and RainDay (10.0 mm). The Low Alarm section includes settings for Indoor Temp (10.0 °C), Indoor Humi (35 %), Outdoor Temp (10.0 °C), Outdoor Humi (35 %), and DewPoint (10.0 °C). A Master Alarm On: dropdown is set to Enable. Save and Cancel buttons are at the bottom.

## 5.4 Calibration

Click **Calibration** option to enter setting menu.

If the data measured by device is found not in complete accord with official data, a reference coefficient can be configured here to make it as accurate as possible.

Calibration settings window showing input fields for Relative Pressure (3.0 hpa), Absolute Pressure (0.0 hpa), Wind Direction (0 °), InTemp (0.0 °C), OutTemp (0.0 °C), InHumi (0 %), OutHumi (0 %), Wind Gain (1.00), Rain Gain (1.00), and Light Gain (1.00). Save and Cancel buttons are at the bottom.

<b>Parameter</b>	<b>Type of Calibration</b>	<b>Default</b>	<b>Typical Calibration Source</b>
REL Barometer	Offset	Current Value	Local airport (3)
ABS Barometer	Offset	Current Value	Calibrated laboratory grade barometer
Wind Direction	Offset	Current Value	GPS, Compass (4)
Temperature	Offset	Current Value	Red Spirit or Mercury Thermometer (1)
Humidity	Offset	Current Value	Sling Psychrometer (2)
Wind	Gain	1.00	Calibrated laboratory grade wind meter (6)
Rain	Gain	1.00	Sight glass rain gauge with an aperture of at least 4" (7)
Solar Radiation	Gain	1.00	Calibrated laboratory grade solar radiation sensor

- (1) The receiver displays two different pressures: absolute (measured) and relative (corrected to sea-level).

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 in Hg (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.

- (2) Only use this if you improperly installed the weather station sensor array, and did not point the direction reference to true north.
- (3) Temperature errors can occur when a sensor is placed too close to a heat source (such as a building structure, the ground or trees).

To calibrate temperature, we recommend a mercury or red spirit (fluid) thermometer. Bi-metal (dial) and digital thermometers (from other weather stations) are not a good source and have their own margin of error. Using a local weather station in your area is also a poor source due to changes in location, timing (airport weather stations are only updated once per hour) and possible calibration errors (many official weather stations are not properly installed and calibrated).

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 ObserverIP receiver to match the fluid thermometer.

- (4) Humidity is a difficult parameter to measure electronically and drifts over time due to contamination. In addition, location has an adverse affect on humidity readings (installation over dirt vs. lawn for example).

Official stations recalibrate or replace humidity sensors on a yearly basis. Due to manufacturing tolerances, the humidity is accurate to  $\pm 5\%$ . To improve this accuracy, the indoor and outdoor humidity can be calibrated using an accurate source, such as a sling psychrometer.

- (5) Wind speed is the most sensitive to installation constraints. The rule of

thumb for properly installing a wind speed sensor is 4 x the distance of the tallest obstruction. For example, if your house is 6m tall and you need mount the sensor on a 1.5m pole:

$$\text{Distance} = 4 \times (6 - 1.5)\text{m} = 18\text{m}.$$

Many installations are not perfect and installing the weather station on a roof can be difficult. Thus, you can calibrate for this error with a wind speed multiplier.

In addition to the installation challenges, wind cup bearings (moving parts) wear over time.

Without a calibrated source, wind speed can be difficult to measure. We recommend using a calibrated wind meter and a constant high speed fan.

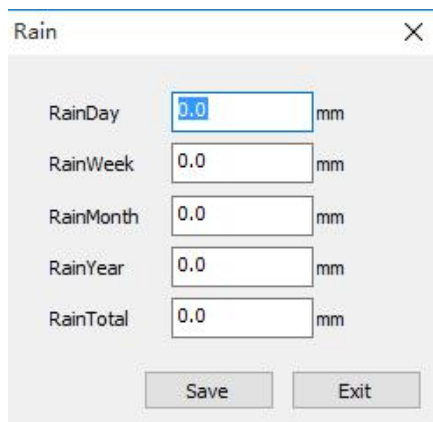
- (6) The rain collector is calibrated at the factory based on the funnel diameter. The bucket tips every 0.01 inch of rain (referred to as resolution). The accumulated rainfall can be compared to a sight glass rain gauge with an aperture of at least 10mm..

Make sure you periodically clean the rain gauge funnel.

The default conversion factor based on the wavelength for bright sunlight is 126.7 lux / w/m<sup>2</sup> . This variable can be adjusted by photovoltaic experts based on the light wavelength of interest, but for most weather station owners, is accurate for typical applications, such as calculating evapotranspiration and solar panel efficiency.

## 5.5 Rain

Rain fall data initial value can be set up here. Setting up as “0” is to zero the rain fall data and restart counting.

A dialog box titled "Rain" with a close button (X) in the top right corner. It contains five input fields, each with a label to its left and a unit "mm" to its right. The labels are "RainDay", "RainWeek", "RainMonth", "RainYear", and "RainTotal". Each input field contains the value "0.0". The "RainDay" field is highlighted with a blue border. At the bottom of the dialog box are two buttons: "Save" and "Exit".

Label	Value	Unit
RainDay	0.0	mm
RainWeek	0.0	mm
RainMonth	0.0	mm
RainYear	0.0	mm
RainTotal	0.0	mm

Save Exit

## 5.6 Mobile Network

Before you set up, please inquire SIM card carrier for APN, APN USER, APN PASSWORD information if it is needed by your service provider.

Note: If you change a SIM card belongs to a different carrier, APN information needs to be changed as well.

**Telephone:** You can set up at most 3 phones to send commands and receive current weather/alarm message via SMS.

**MSG Test:** Send message with contents filled inside. It is helpful to tell that system can talk to your phone correctly.

**SMS Alarm Interval:** the interval of sending alarm SMS triggered by same condition ranges from 10 minutes to 120 minutes. Choose "0" means alarm SMS will be sent only once.

**SMS send Current interval:** the interval of sending current weather data to authorized phone, ranges from 1 minute to 24hours. Set up as "0" means real time weather data will not be sent.



Mobile Network

Mobile Network

APN:

User:

Password:

SMS Interval

SMS Alarm Interval

Minute

SMS Send Current Interval

Hour

SMS ON/OFF

ON

▼

Telephone

Tel1:

Tel2:

Tel3:

Sync Net Time

MSG Test

Save

Cancel

## 5.7 Record Menu

Click **Record** menu, there are **Max/Min** and **SDCard File** options.

Weather Logger

Setup

Record

Upload

Factory Reset

InTem

25.8 °C

Humi

71 %

AbsBaro

1003.8 hpa

RelBaro

912.8 hpa

Max/Min

SDCard File

# Max/Min

This section is used to display the recorded min and max value.

MAX/Min

Indoor Temp

Max: 25.8 °C

Min: 25.8 °C

Indoor Humi

Max: 71 %

Min: 71 %

Outdoor Temp

Max: 25.3 °C

Min: 25.3 °C

Outdoor Humi

Max: 65 %

Min: 65 %

DewPoint

Max: 18.3 °C

Min: 18.3 °C

Absolute Pressure

Max: 1004.1 hpa

Min: 1003.7 hpa

HeatIndex

Max: 25.3 °C

WindChill

Min: 25.3 °C

Wind

Max: 0.0 m/s

Gust

Max: 0.0 m/s

RainRate

Max: 0.0 mm/h

RainHour

Max: 0.0 mm

RainDay

Max: 0.0 mm

UVI

Max: 0

Light

Max: 0.0 lux

Clear

Cancel

# 5.8 SDCard File

Click **SDCard File** to download and analyze data stored on the SD Card.

Select the file you wish to view from the list and press **Select** to view the data.

SDCard File

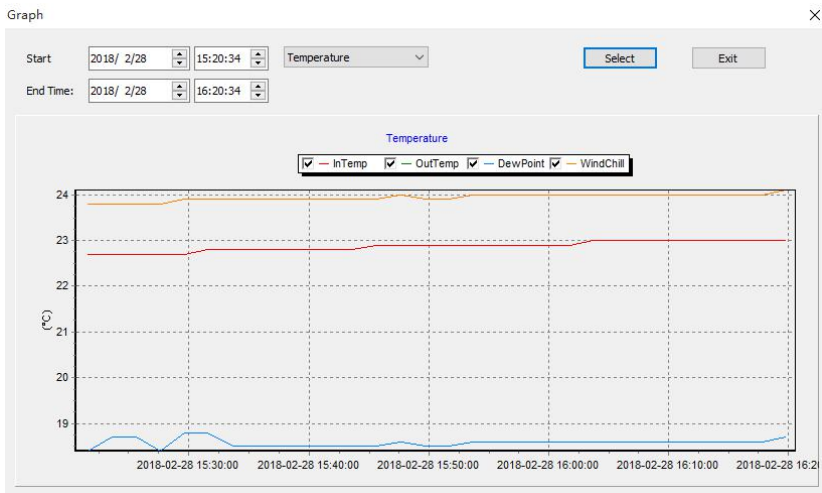
Select: 201803F.CSV

SelectDeleteGraph

File Name	Size	Time	Indoor Tem...	Indoor Hum...	Outdoor Te...	Outdoor Hu...	Dew Point(C)	Wind Chill(C)
201801V.CSV	51.73 KB	2/28 12:32:49	22.1	69	21.2	61	13.4	21.2
201802A.CSV	91.73 KB	2/28 12:34:50	22.1	69	23.0	73	17.9	23.0
201802B.CSV	68.70 KB	2/28 12:36:50	22.1	69	23.0	73	17.9	23.0
201802C.CSV	247.33 KB	2/28 12:38:51	22.1	69	23.0	73	17.9	23.0
201802D.CSV	81.14 KB	2/28 12:40:52	22.1	69	23.1	73	18.0	23.1
201701A.CSV	0.59 KB	2/28 12:42:52	22.1	69	23.1	73	18.0	23.1
201802E.CSV	1.67 KB	2/28 12:44:53	22.2	69	23.1	72	17.8	23.1
201802F.CSV	38.22 KB	2/28 12:46:53	22.2	69	23.1	72	17.8	23.1
201803A.CSV	1.83 KB	2/28 12:48:54	22.2	69	23.2	72	17.9	23.2
201701B.CSV	0.45 KB	2/28 12:50:54	22.2	69	21.3	61	13.5	21.3
201803B.CSV	75.96 KB	2/28 12:52:55	22.2	69	21.3	61	13.5	21.3
201803C.CSV	0.66 KB	2/28 12:54:55	22.2	69	21.3	61	13.5	21.3
201803D.CSV	1.49 KB	2/28 12:56:56	22.2	69	21.3	61	13.5	21.3
201803E.CSV	0.66 KB	2/28 12:58:56	22.2	69	21.3	61	13.5	21.3
201701C.CSV	19.33 KB	2/28 13:00:57	22.2	69	21.3	61	13.5	21.3
201803F.CSV	2.95 KB	2/28 13:02:57	22.2	69	21.3	61	13.5	21.3
201803G.CSV	0.45 KB	2/28 13:04:58	22.2	69	21.3	61	13.5	21.3
201803H.CSV	0.45 KB	2/28 13:06:58	22.2	69	21.3	61	13.5	21.3
201803I.CSV	0.45 KB	2/28 13:08:59	22.3	69	21.3	61	13.5	21.3
201803J.CSV	0.45 KB	2/28 13:10:59	22.2	69	21.3	61	13.5	21.3
201803K.CSV	0.45 KB	2/28 13:13:00	22.2	69	21.3	61	13.5	21.3
201803L.CSV	0.97 KB	2/28 13:15:00	22.2	69	21.3	61	13.5	21.3
201803M.CSV	0.45 KB	2/28 13:17:01	22.3	69	21.3	61	13.5	21.3
201803N.CSV	0.45 KB	2/28 13:19:02	22.3	69	21.3	61	13.5	21.3
201803O.CSV	0.45 KB	2/28 13:21:02	22.3	69	21.3	61	13.5	21.3
201803P.CSV	0.45 KB	2/28 13:23:03	22.3	69	21.3	61	13.5	21.3

To graph the data:

1. Identify the data file start and end date and times.
2. Press the **Graph** button.
3. Enter the start and end date and times in the appropriate fields identified in Step 1.
4. Select the parameter you wish to graph, and press the **Select** button.



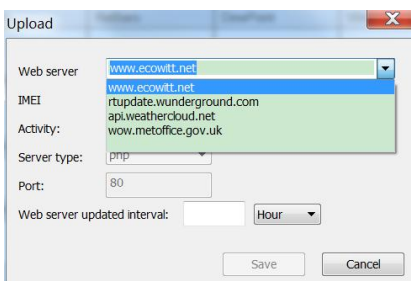
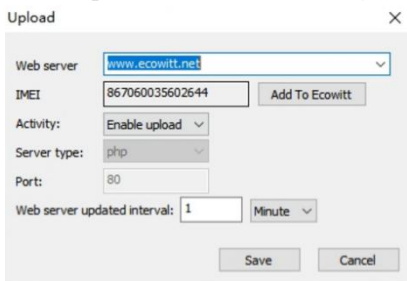
## 5.9 Upload

To upload weather data to the internet, select **Upload** from the menu bar.

User can upload data to four public weather server: ecowitt.net, Wuderground, WeatherCloud and WOW or your own website (need to have the same protocol with [www.wunderground.com](http://www.wunderground.com)). If user choose from the four public websites, you do not need to set the server type and port. If user choose to upload to customized website, you need to enter the Web server, and choose the Server type and Port.

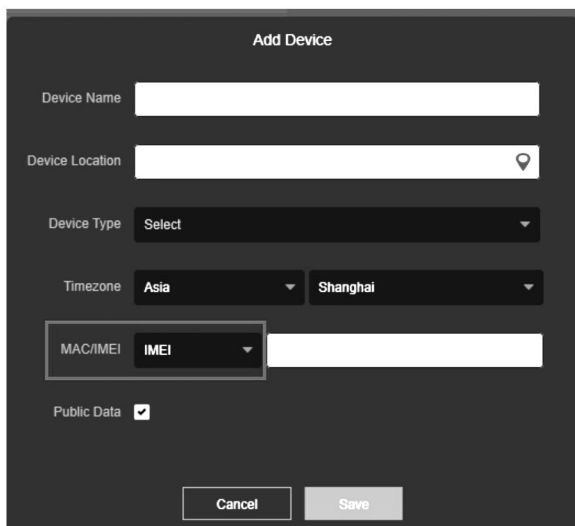
**Note:** Minimum uploading interval is 10 minutes using battery and solar panel

in the package. If you use USB charger minimum uploading can be 3 minutes. It won't upload data to internet if you set interval to "0".

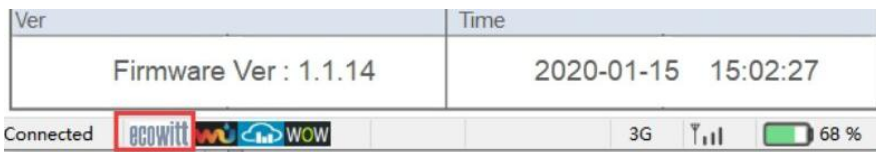


Operations tips for uploading to ecowitt.net:

1. Go to the Upload page - set the Activity to Enable upload - click the button of "Add To Ecowitt"
2. Register on the [www.ecowitt.net](http://www.ecowitt.net) and then go to Devices to add the device. When selecting MAC/IMEI, please select IMEI and input the numbers from the PC software.



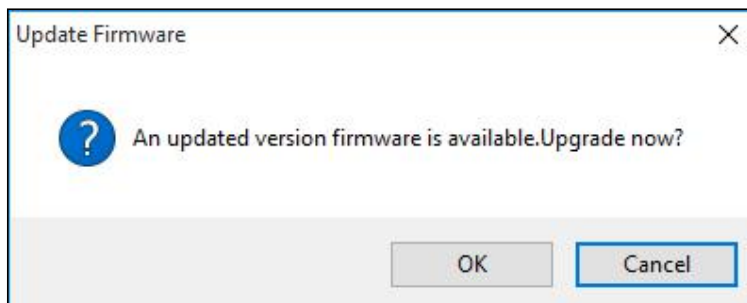
3. If uploaded successfully, ecowitt logo icon will appear on the PC software:



If you have any problem during the operation, please contact our customer service for help.

## 5.10 Update Firmware

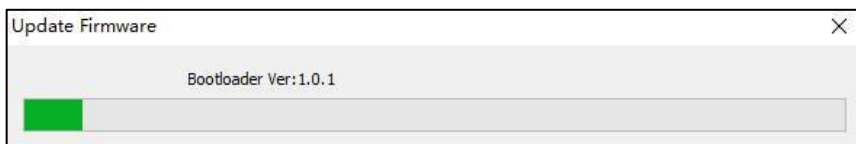
After install the PC software and open on computer, if there is new version firmware available, a dialog box will pop up indicating to upgrade or not. Click "OK" will guide to upgrade the firmware.



System will download firmware first. After that it upgrades the new firmware.

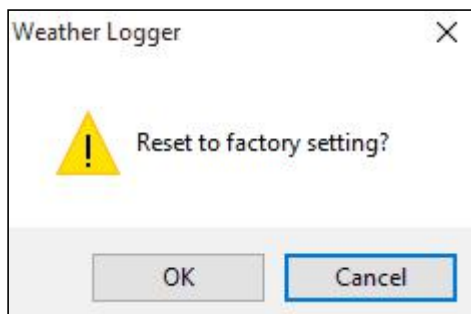


During upgrading:



## 5.11 Factory Reset

Press **Factory Reset** button, below indication will be displayed:



Click "**OK**" to return to factory default settings or click "cancel" to cancel the factory reset.

## 6 Mobile Phone Control via SMS

Users can check current weather data by sending SMS to the receiver terminal via any of the 3 pre-programmed mobile numbers (only to be programmed with PC software, please refer to USB configure tool Operation).

SMS command list:

1. **Current** : send current weather data
  2. **MAX** : send Maximum value recorded
  3. **MIN** : send Minimum value recorded
  4. **Interval**: send interval value setting
  5. **Status**: send system status, like battery voltage, sensor status, network condition
  6. **Alarm ON**: turn on sending alarm SMS function
  7. **Alarm Off**: turn off sending alarm SMS function.
  8. **Reboot**: Reboot the device
1. View current weather Data: **Current**

Sending a SMS of “Current” to the station will trigger a command to the weather station to send its latest weather data to your mobile phone via SMS.

Answer from the weather station is as shown in below figure by 2 messages:

Current:  
InTemp:28.9C  
InHumi:92%  
OutTemp:31.9C  
OutHumi:77%  
AbsBaro:8.86inHg  
RelBaro:29.92inHg  
DewPoint:27.4C  
WindChill:31.9C  
HeatIndex:42.7C  
WindDir:267deg

Current:  
Wind:2.5mph  
Gust:3.4mph  
Rain:  
Rate:0inch/h  
Day:0.73inch  
Week:1.36inch  
Month:1.36inch  
Year:1.36inch  
Light:390.37w/m2  
UVI:3  
Battery:3.8V

## 2. View Max/Min weather data record: **MAX::MIN**

Sending SMS of “**Max**” or “**Min**” to weather station triggers sending recorded maximum value to your mobile phone.

The SMS from station looks like this:

Max:  
InTemp=28.0C  
InHumi=68%  
OutTemp=28.8C  
OutHumi=73%  
Dewpoint:23.5C  
AbsBaro:1006.6hpa  
HeatIndex:32.8C

Max:  
Wind:0m/s  
Gust:0m/s  
RainRate:0mm/h  
RainHour:0mm  
RainDay:0mm  
Light:0lux  
UVI:0

Min:  
InTemp=27.5C  
InHumi=70%  
OutTemp=26.1C  
OutHumi=67%  
AbsBaro:997.5hpa  
Dewpoint:19.5C  
WindChill:26.1C

## 3. Check programmed interval time: **Interval**

Send SMS “Interval” to station triggers sending its pre-programmed interval value stored on station, it is mainly for reminding the value programmed on station. The reply of SMS from station is like this:

Alarm=10min  
Send=12h  
Save=2min  
Updata=3min



**Alarm:** The interval of alarm repeating. A repeated alarm will only be sent after this interval

**Send:** The interval of sending current weather data by SMS.

**Save:** The logging history data interval that to be saved on Mirco SD Card.

**Update:** The interval of uploading data to internet.

#### 4. Enable or disable alarm function: **Alarm On :: Alarm Off**

Send SMS “Alarm On” or “Alarm Off” will enable or disable the pre-programmed alarm function. Station will reply “Alarm disable” or

“Alarm Enable” to confirm.

Alarm enable

Alarm disable

#### 5. Check weather station status: **Status**

Send SMS “**Status**” to station will trigger station to send back current condition of the station system. The SMS from station looks like this:

Status:  
(In)Transmitter:normal  
(Out)Transmitter:error  
Network:normal  
SDCard:normal  
Battery:3.5V

**(In)Transmitter=normal**  
functioning without errors

The weather station indoor sensor is

**(In)Transmitter =error**  
sensor

An error has occurred, check the indoor

**(Out) Transmitter=normal**  
is functioning without errors

The weather station outdoor sensor

**(Out) Transmitter =error**  
outdoor sensor

An error has occurred, check the

**Network=normal**  
without errors

The weather station network is functioning

**Network= error**  
station SIM card.

An error has occurred, check the weather

**SD card= normal**

The SD card is functioning without errors

**SD card=not exist**

No Micro SD card is detected or available.

Check the weather station and insert a  
suitable Micro SD card.

**Battery=3.5V**

The voltage of battery in console is 3.5V

## 6.1 SMS data from station

Main base station will send weather, alarm or critical condition to system value regularly via SMS. Below are the SMS received looked like:

Current:  
InTemp:28.9C  
InHumi:92%  
OutTemp:31.9C  
OutHumi:77%  
AbsBaro:8.86inHg  
RelBaro:29.92inHg  
DewPoint:27.4C  
WindChill:31.9C  
HeatIndex:42.7C  
WindDir:267deg

Current:  
Wind:2.5mph  
Gust:3.4mph  
Rain:  
Rate:0inch/h  
Day:0.73inch  
Week:1.36inch  
Month:1.36inch  
Year:1.36inch  
Light:390.37w/m2  
UVI:3  
Battery:3.8V

AlarmHigh:  
InTemp:29.4C  
RainRate:36.6mm  
RainDay:6.1mm

AlarmLow:  
OutTemp:22.5C  
OutHumi:55%

## 6.2 Low Power alarm

The receiver unit constantly monitors the battery voltage. An SMS alert will be sent to pre-programmed phone when battery voltage drops below 3.5V:

Warning: Battery voltage low:  
3.5V. Device will soon suspend  
internet uploading

When battery voltage drops further and below 3.3v, system will suspend pushing data to weather server. SMS below will be sent.

Warning: Battery voltage low:  
3.3V. Internet uploading is  
suspended

All functions will be suspended when battery voltage drops below 3V. When battery is charged to 3.9v or even higher, system will be activated by sending this SMS:

Battery levels sufficient.  
Restart RF and data Upload

If system has restarted after reset, a startup SMS will be sent:

Device startup

## 7 Weather Server

The receiver unit is capable of sending your sensor data to select internet-based weather services and your own website(need to have the same protocol with [www.wunderground.com](http://www.wunderground.com)). The supported services are shown in the table below:

Service	Website	Description
Ecowitt Weather	<a href="https://www.ecowitt.net">https://www.ecowitt.net</a>	Ecowitt is a new weather server that can host a bunch of sensors that other services don't support.
Weather Underground	<a href="https://www.wunderground.com">https://www.wunderground.com</a>	Weather Underground is a free weather hosting service that allows you to send and view your weather station data real-time, view graphs and gauges, import text data for more detailed analysis and use iPhone, iPad and Android applications available at Wunderground.com. Weather Underground is a subsidiary of The Weather Channel and IBM.
WOW	<a href="http://wow.metoffice.gov.uk/">http://wow.metoffice.gov.uk/</a>	WOW is a UK based weather observation website.
Weather Cloud	<a href="https://weathercloud.net">https://weathercloud.net</a>	Weathercloud is a real-time weather social network formed by observers from around the world.
Customized Website		Supports uploading to your customized website, if the website has the same protocol with Wunderground or Ecowitt

## 7.1 Viewing data on ecowitt.net

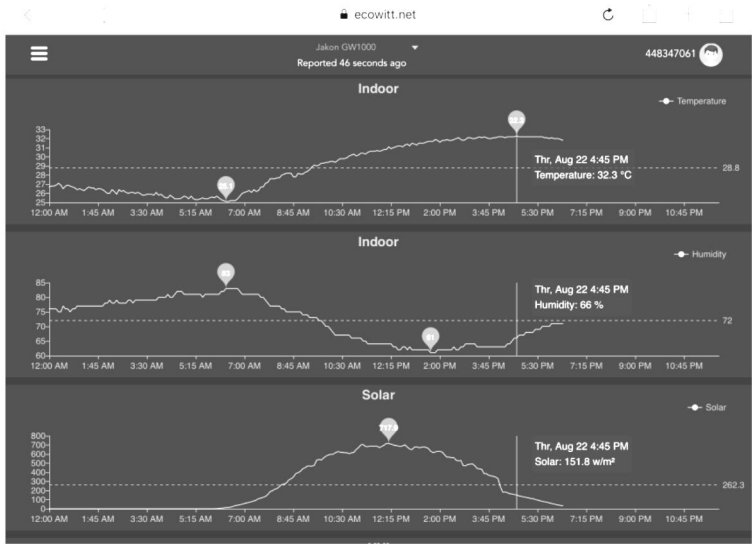
You can observe your sensor’s data by using the ecowitt.net web site. You will use a URL like this one, where your station ID replaces the text “STATIONID”.  
<https://www.ecowitt.net/home/index?id=STATIONID>

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

6:37 PM Thu Aug 22

ecowitt.net

Jakon GW1000  
Reported 13 seconds ago

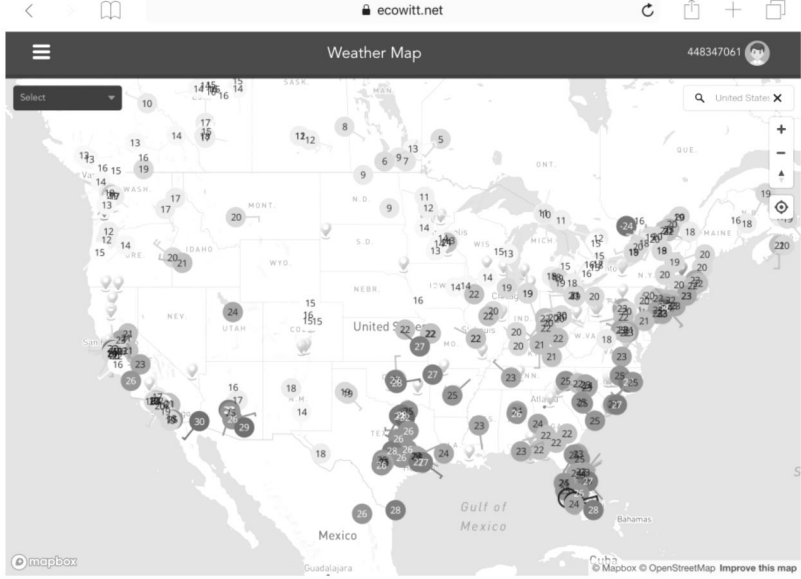
448347061

Daily

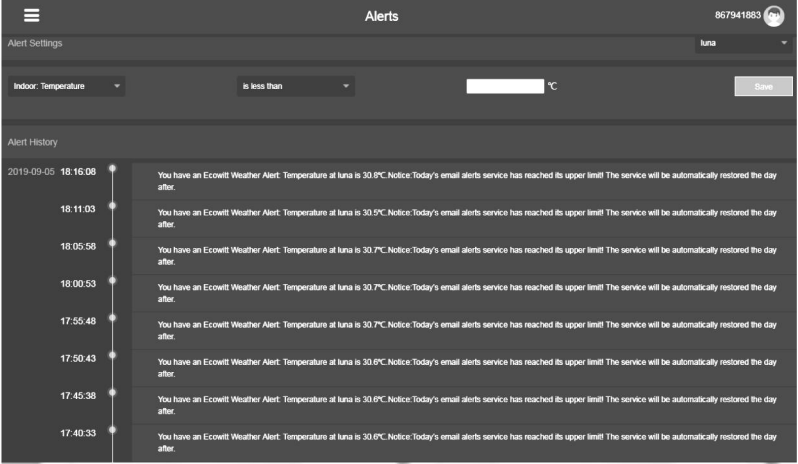
Aug 22/2019

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)	Wind 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



## 7.2 Registering with and using wunderground.com

1. Visit Wunderground.com and click **Join** as the right arrow indicates and select the **Sign up for free** option.

**WEATHER UNDERGROUND** | Maps & Radar | Severe Weather | News & Blogs | Photos & Video | Activities | More | Search Locations | Log in | **Join**

Popular Cities: San Francisco, CA 60° F Partly Cloudy | Manhattan, NY 78° F Cloudy | Atlanta, GA 75° F Clear | Chicago, IL 74° F Fair | Boston, MA 78° F Partly Cloudy | Houston, TX 78° F Clear | Paris, France 71° F Sunny | Munich, Germany 77° F Rain

### Join Weather Underground

- Get the most accurate hyperlocal weather
- Real-time alerts for your city
- Add your webcam or personal weather station

Email

Password (5-30 characters)  [Show](#)

☐ I agree to the [Terms of Service](#)

☐ I would like to receive WU updates via email

**Sign up for free**

[Already have an account? Sign in](#)

[Terms of Use](#) | [Privacy Policy](#)

Please read these terms carefully. By using Weather Underground or signing up for an account, you're agreeing to these terms.

2. Click **More** and select **Add Weather Station** to register your station

**WEATHER UNDERGROUND** | Maps & Radar | Severe Weather | News & Blogs | Photos & Video | Activities | More | Search Locations

Popular Cities: 60° F San Francisco, CA | 78° F Manhattan, NY | 75° F Atlanta, GA | 74° F Chicago

**Active Warning: Excessive Heat Warning (See More)**

### Los Angeles, CA

70° F | 102° | 75°  
Feels like 70° | 0%

71° 69° 71° 92° 100° 104°  
12AM 6AM NOON GMT+8

**Full Forecast**

Get Daily Forecasts by Email: Los Angeles, California | 3187803331@wunderground.com

- Buy a Weather Station
- Add Weather Station**
- Weather Station Network
- Historical Weather
- Mobile Apps
- Daily Forecast Flyer
- Weather API for Developers
- Site Map



# Personal Weather Station Network

Overview Buying Guide **Register with WU**

## Step 1: Register Your Station

1. Type in the **city, state, country** where your weather station will be located.
2. Drag the **red marker** to your specific location.

1032 West 8th Street, Los Angel...

Latitude: 34.0494  
Longitude: -118.264099

Elevation (ft): 288.713920

Height Above Ground (ft): 5

[Verify Location](#)

3. Click **verify location** and fill out the form.

After submitting the form, you will see the following:

### Step 3: Add Your WU Info to Your Weather Station Software

Congratulations. Your station is now registered with Wunderground!

You are almost done. Now go to your weather station software and add the following:

Your Station ID:

**KCALOSAN764**

Your Station Key/Password:

**v8cp612c**

**My Weather Stations**

**It may take a few minutes or several hours for your station to start sending data to Weather Underground.**

ID and Password are case-sensitive. Process may require you to register with a 3rd party site (eg. *rainwise.net*).

Not seeing your station data yet? Check out our [PWS Help Center](#).

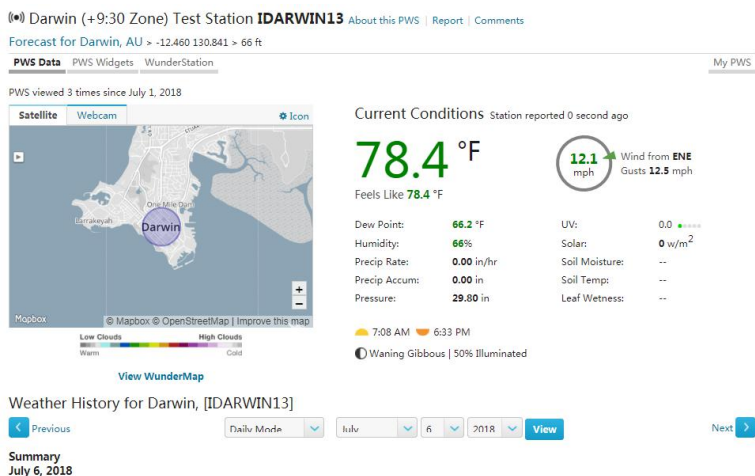
4. Take note of the station ID and key/password and enter it in the PC software.

## 7.3 Viewing data on wunderground.com

The most basic way to observe your weather station's data is by using the wunderground.com web site. You will use a URL like this one, where your station ID replaces the text "STATIONID":

<http://www.wunderground.com/personal-weather-station/dashboard?ID=STATIONID>

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



There are also some very useful mobile apps. The URLs provided here go to the Web version of the application pages. You can also find them directly from the iOS or Google Play stores:

**WunderStation:** iPad application for viewing your station's data and graphs

<https://itunes.apple.com/us/app/wunderstation-weather-from-your-neighborhood/id906099986>



**WU Storm:** iPad and iPhone application for viewing radar images, animated wind, cloud coverage and detailed forecast, and PWS station data

<https://itunes.apple.com/us/app/wu-storm/id955957721>



**Weather Underground: Forecast:** iOS and Android application for forecasts

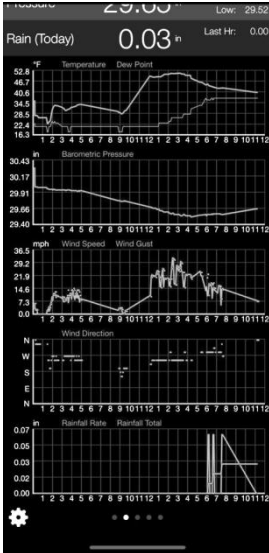
<https://itunes.apple.com/us/app/weather-underground-forecast/id486154808>

<https://play.google.com/store/apps/details?id=com.wunderground.android.weather&hl=en>



**PWS Weather Station Monitor:** View weather conditions in your neighborhood, or even right in your own backyard. Connects to wunderground.com

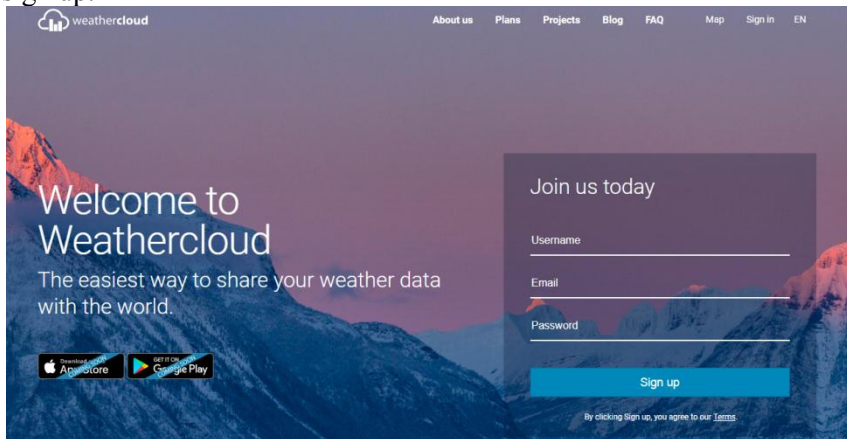
<https://itunes.apple.com/us/app/pws-weather-station-monitor/id713705929>



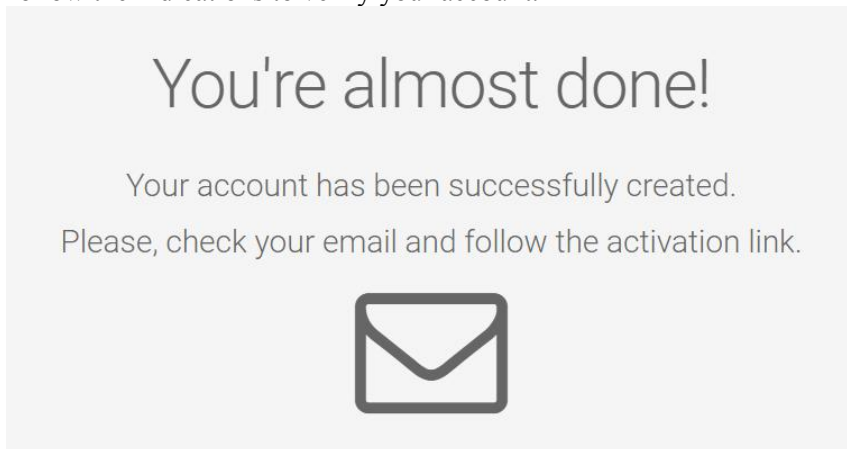
## 7.4 Registering with and using Weathercloud

To register with Weathercloud follow these steps:

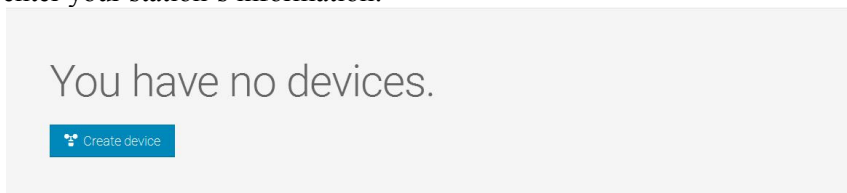
1. Visit [weathercloud.net](https://weathercloud.net) and enter your Username, Email and Password to sign up.



2. Follow the indications to verify your account.



3. You will then be prompted to add a device/ Select “Create device” and enter your station’s information:



4. After registering your station, take note of the “Weathercloud ID” and “Key” presented to you. Enter these values in the PC software:

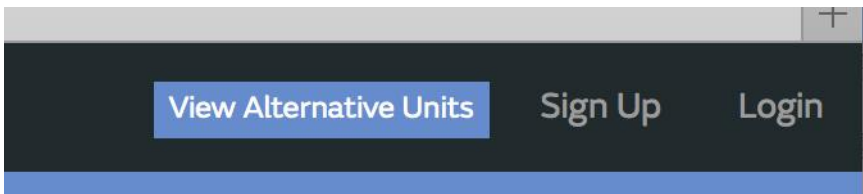
## **7.5 Registering with Weather Observations Website (WOW)**

To have your weather station upload data to the Met Office’s WOW site you will need to complete the following steps:


1. Sign Up with WOW
2. Confirm your email with WOW
3. Login to WOW
4. Create/Set up a new WOW site

### **1. Sign up with WOW**

Navigate your browser to <http://wow.metoffice.gov.uk>. On the top-right side of the resulting page you will see menu options. Click “Sign Up”.



You will be presented with the screen below where you will choose to either create a new account or use an already existing account. Click the desired option.

 **Met Office**

## Register for Weather Observations Website

If you do not already have a Met Office account, please register a new account.


New Account

If you already have an account, please add a Weather Observations Website subscription to your existing account.

Existing Account

If you currently access services using <http://services.metoffice.gov.uk> or <http://secure.metoffice.gov.uk>, please register for a new Weather Observations Website account.

If you chose “New Account” you will be presented with a form to fill out:

 **Met Office**

## Register for Weather Observations Website

**First Name**

**Last Name**

**Username**

**Password**

**Confirm Password**

**Email**

The actual form is longer, but all questions should be self-explanatory. Complete and submit the form. You will receive the following notice on completion:



## Registration Successful

You will shortly receive an email with instructions on how to login.

### 2. Confirm email with WOW

Now wait for the email to arrive and click the link in that email to confirm your email address.

### 3. Login with WOW

Follow instructions on the screen and login to the site.

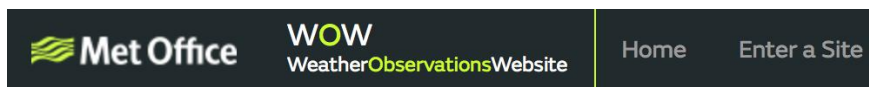
#### Create/Set up a new WOW site

Once you are logged in you will need to create a new WOW site. “Sites” are the means by which WOW organizes weather data the you contribute. Basically, WOW builds a personal web site for your weather station. Associated with the web site is two items you will need to allow uploading of data:

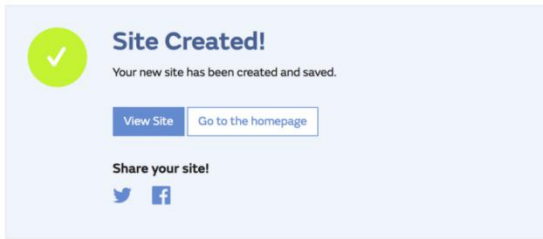
**Site ID:** This is an arbitrary number that is used to distinguish your site from another. This number appears (in brackets) next to or underneath the name of your site on the site information page, for example: 6a571450-df53-e611-9401-0003ff5987fd

**Authentication Key:** This is a 6-digit number that is used to ensure data is coming from you and not another user.

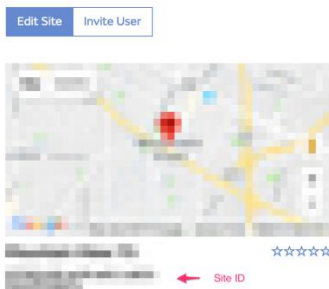
Begin setting up a new site by clicking “Enter a Site”:



You will be presented with a form where you detail your station’s location and a bunch of other settings related to how you wish the site to operate. After you complete the setup, you should see:



Make sure you are (still) logged in to the WOW site. Login as necessary. Now click on “My Sites” in the navigation bar at the top. If you have only 1 site, you will now be shown its page. If you have multiple, you will have to choose the correct one first. On this page, on the right side you will find the site id just below the map:



You will also need to establish a unique 6 digits PIN code that you should keep secret. It is the “Authentication Key.” Setup this number by clicking on “Edit Site”) and filling out the with a 6-digit number of your choice:

### Authentication Key

You will need both “Site ID” and “Authentication Key” to setup the upload configuration for WOW in the PC software.

# 8 Maintenance

## 1. Clean Rain Gauge

Check the rain gauge every 3 months. Rotate the funnel counter-clockwise and lift it up. Clean the funnel and bucket with a damp cloth to remove any dirt, debris and insects. Spray the array lightly with insecticide, if there's a bug infestation.

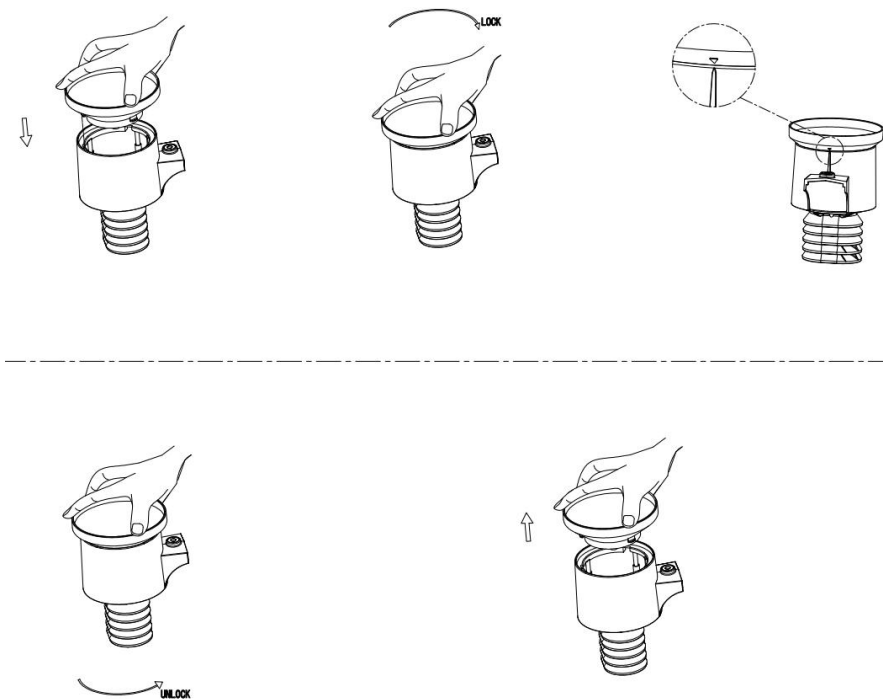


Figure 60: Rain gauge installation and maintenance

## 2. Clean Solar Radiation Sensor and Solar Panel

The solar radiation sensor and solar panel of the outdoor sensor array need to be cleaned with a non-abrasive slightly damp cloth every 3 months.

### **3. Replacing Batteries Regularly**

Batteries of the outdoor sensor array need to be replaced every 1-2 years for environmental friendly. In serious environments, check the batteries every 3 months and apply a corrosion preventing compound(not included) on the battery terminals for protection.

### **4. To Prevent Snow build up**

In snowy days, use anti-icing silicon spray on the top of the weather station to prevent snow build up.

## 9 Troubleshooting Guide

Problem	Solution
Outdoor data not transmitted.	<p>The outdoor sensor array may have initiated properly and the data is registered by the console as invalid, and the console must be reset. Press the reset button as described in <b>Initial Receiver Unit Set Up</b></p> <p>Take out the batteries and wait one minute, while covering the solar panel to drain the voltage.</p> <p>Put batteries back in and resync the console with the sensor array about 10 feet away.</p> <p>The LED next to the battery compartment will flash every 16 seconds. If the LED is not flashing every 16 seconds...</p> <p>Replace the batteries in the outside sensor array.</p> <p>If the batteries were recently replaced, check the polarity. If the sensor is flashing every 16 seconds, proceed to the next step.</p> <p>There may be a temporary loss of communication due to reception loss related to interference or other location factors,</p> <p>or the batteries may have been changed in the sensor array and the console has not been reset. The solution may be as simple as powering down and up the console (remove AC power and batteries, wait 10 seconds, and reinsert AC power and batteries).</p>
Temperature sensor reads too high in the day time.	<p>Make certain that the sensor array is not too close to heat generating sources or structures, such as buildings, pavement, walls or air conditioning units.</p> <p>Use the calibration feature to offset installation issues related to radiant heat sources.</p>

Problem	Solution
Relative pressure does not agree with official reporting station	<p>You may be viewing the absolute pressure, not the relative pressure.</p> <p>Select the relative pressure. Make sure you properly calibrate the sensor to an official local weather station.</p>
Rain gauge reports rain when it is not raining	<p>An unstable mounting solution (sway in the mounting pole) may result in the tipping bucket incorrectly incrementing rainfall. Make sure you have a stable, level mounting solution.</p>
Data not reporting to Wunderground.com	<ol style="list-style-type: none"> <li>1. <b>Confirm your password or key is correct. It is the password you registered on Wunderground.com.</b> Your Wunderground.com password cannot begin with a non-alphanumeric character (a limitation of Wunderground.com, not the station). Example, \$oewkrf is not a valid password, but oewkrf\$ is valid.</li> <li>2. <b>Confirm your station ID is correct.</b> The station ID is all caps, and the most common issue is substituting an O for a 0 (or visa versa). Example, KAZPHOEN11, not KAZPH0EN11</li> <li>3. Make sure the date and time is correct on the PC software. If incorrect, you may be reporting old data, not real time data.</li> <li>4. Check your router firewall settings. The console sends data via Port 80.</li> </ol>

# 10 Specifications

## Outdoor data

RF working distance in open field: 100m(300 feet)

Frequency: 915/868/433MHz (915MHz for North America, 868MHz for Europe, 433 for other areas)

Temperature range: -40°C--60°C(-40°F to +140°F) Resolution: 0.1°C (0.2°F)

Measuring range rel. humidity: 1%~99%

Rain volume display: 0 – 9999mm (show --- if outside range)

Rain Resolution: 0.254mm/0.01inch

Rain Accuracy: <8%

Wind speed: 0-160km/h (0~100mph) (show --- if outside range)

Light: 0-300000 lux

UV index: 0-15(0-2000 w/m2)

Sensor update interval: 16 sec

Water proof level: IPX3

## Indoor data

Measuring interval: 61 sec

Indoor temperature range: -40°C--60°C(-40°F to +140°F)

Resolution: 0.1°C (0.2°F)

Measuring range rel. humidity: 10%~99%

Resolution: 1%

Measuring range air pressure: 300-1100hPa (8.85-32.5inHg)

Accuracy: +/-3hpa under 700-1100hPa

Resolution: 0.1hPa (0.01inHg)

## Power consumption

Base station: 1x 18650 battery (included) or USB charger (USB cable included)

Solar panel as backup power: Voc: 6.2V, Isc : 500mA, Size:195\*138mm

Indoor sensor: 2xAA Alkaline batteries (not included)

Outdoor sensor: 2xAA Alkaline batteries (not included)

Battery life: Minimum 12 months for indoor & outdoor sensor

## 11 Warranty Information

**We disclaim any responsibility for any technical error or printing error, or their consequences.**

**All trademarks and patents are recognized.**

We provide a 1-year limited warranty on this product against manufacturing 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 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, claims based on misrepresentation by the seller or performance variations resulting from installation-related circumstances.



**Please help in the preservation of the environment and return used batteries to an authorized depot.**

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