Solar Powered Wireless Wi-Fi Weather Station
Operation Manual

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1. Introduction

Thank you for your purchase of the Solar Powered Wireless WiFi Weather Station. The following user guide provides step by step instructions for installation, operation and troubleshooting.

2. Warnings and Cautions

⚠ **Warning:** Any metal object may attract a lightning strike, including your weather station mounting pole. Never install the weather station in a storm.

⚠ **Warning:** Installing your weather station in a high location may result in injury or death. Perform as much of the initial check out and operation on the ground and inside a building or home. Only install the weather station on a clear, dry day.

3. Quick Start Guide

Although the manual is comprehensive, much of the information contained may be intuitive. In addition, the manual does not flow properly because the sections are organized by components.

The following Quick Start Guide provides only the necessary steps to install, operate the weather station, and upload to the internet, along with references to the pertinent sections.

Required		
Step	**Description**	**Section**
1	Assemble and power up the sensor array	5.3.1-5.3.3
2	Power up the display console and synchronize with sensor array	5.5
5	Mount the sensor array	5.3.4
3	Set date and time on console	6.4.3
4	Calibrate the relative pressure to sea-level conditions (local airport) on console	6.4.4
6	Reset the rain to zero on console	6.4.8
Optional		
7	Configure WiFi	8.1
8	Register and upload to Weather Server	9

4. Pre-Installation Checkout and Site Survey

4.1 Pre Installation Checkout

Before installing your weather station in the permanent location, we recommend operating the weather station for one week in a temporary location with easy access. This will allow you to check out all of the functions, insure proper operation, and familiarize you with the weather station and calibration procedures. This will also allow you to test the wireless range of the weather station.

4.2 Site Survey

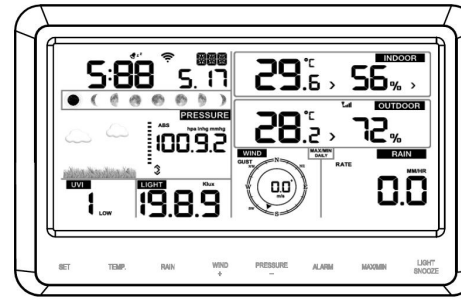
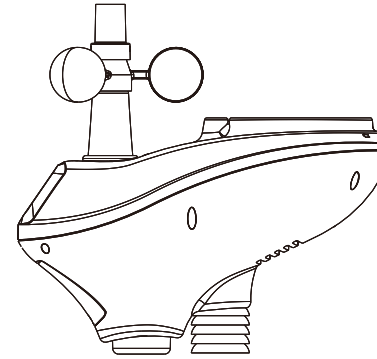
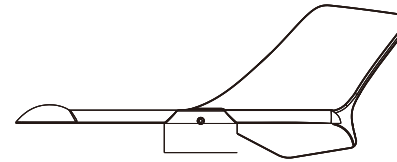
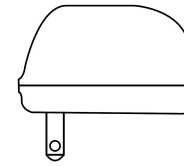
Perform a site survey before installing the weather station. Consider the following:

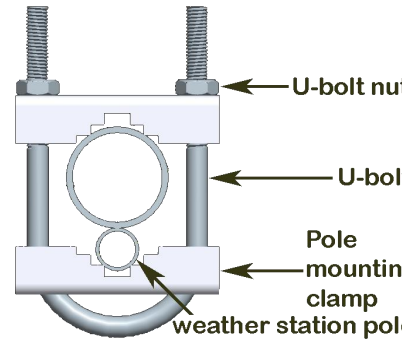
1. You must clean the rain gauge every few months and change the rechargeable batteries every 2-3 years. Provide easy access to the weather station.
2. Avoid radiant heat transfer from buildings and structures. In general, install the sensor array at least 5' from any building, structure, ground, or roof top.
3. Avoid wind and rain obstructions. The rule of thumb is to install the sensor array at least four times the distance of the height of the tallest obstruction. For example, if the building is 20' tall, and the mounting pole is 6' tall, install 4 x (20 – 6)' = 56' away.
4. Wireless Range. The radio communication between receiver and transmitter in an open field can reach a distance of up to 330 feet, providing there are no interfering obstacles such as buildings, trees, vehicles, high voltage lines. Wireless signals will not penetrate metal buildings. Under most conditions, the maximum wireless range is 100'.
5. Radio interference such as PCs, radios or TV sets can, in the worst case, entirely cut off radio communication. Please take this into consideration when choosing console or mounting locations. Make sure your display console is at least five feet away from any electronic device to avoid interference.

5. Getting Started

The WiFi weather station consists of a display console (receiver), an all in one sensor array, and wireless thermo-hygrometer-barometer.

5.1 Parts List

QTY	Item	Image
1	Display Console Frame Dimensions (LxWxH): 18.7x11.5x1.9cm (7.35 x 4.5 x 0.75”) LCD Dimensions (LxW): 15.6x 7.6cm (6.2 x 3”)	
1	Sensor Array	
1	Wind Vane	
1	5V DC Adaptor	
1	Pole	

1	Pole mounting U-bolt	
2	Pole mounting clamps	
2	Pole mounting U-bolt nuts	
1	Allen wrench	
1	User manual	

5.2 Recommend Tools

- Precision screwdriver (for small Phillips screw on battery cover door)
- Adjustable wrench (for mounting pole)
- Compass or GPS (for wind direction calibration)

5.3 Sensor Array Set Up

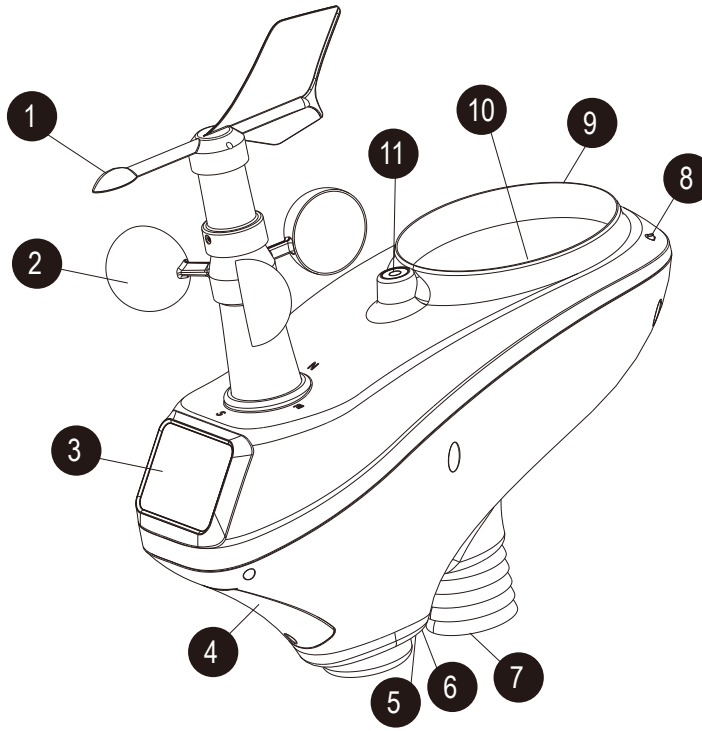
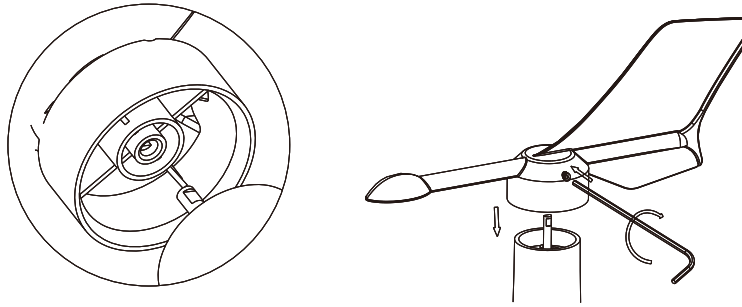


Figure 1

No	Description	No	Description
1	Wind Vane (measures wind direction)	7	Thermo-hygrometer Sensor (measures temperature and humidity)
2	Wind Speed Sensor (measures wind speed)	8	UV Sensor
3	Solar collector	9	Solar Radiation Sensor
4	Rechargeable battery compartment	10	Rain Collector (self emptying)
5	LED transmission indicator (turns on for 4 seconds on power up, flashes once per 16 seconds)	11	Bubble Level
6	Reset button		

5.3.1 Install Wind Vane

Reference Figure 2. (a) Locate and align the flat key on the wind vane shaft to the flat key on the wind vane and push the vane on to the shaft. (b) tighten the set screw with the hex wrench (included).



(a) **(b)**

Figure 2

5.3.2 Install Mounting Pole

Reference Figure 3. Remove the mounting pole collar by rotating counter clockwise.

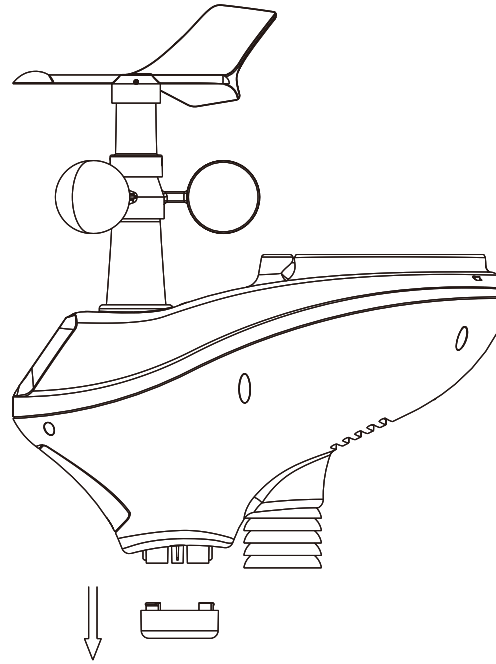


Figure 3

Reference Figure 4. Locate and align the groove on the sensor array and mounting pole.

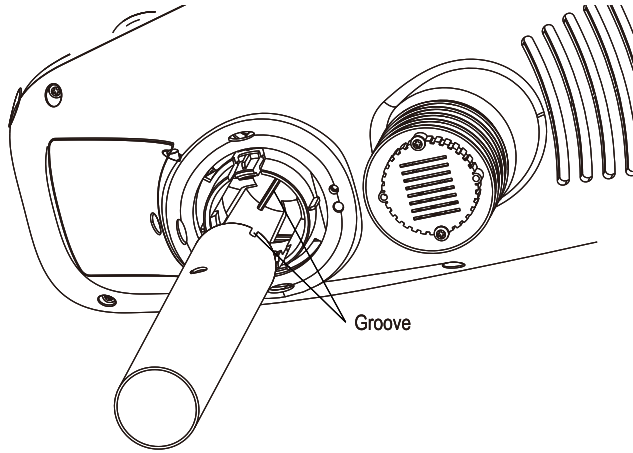


Figure 4

Reference Figure 5. Turn the mounting pole collar to lock the pole into place by rotating clockwise.

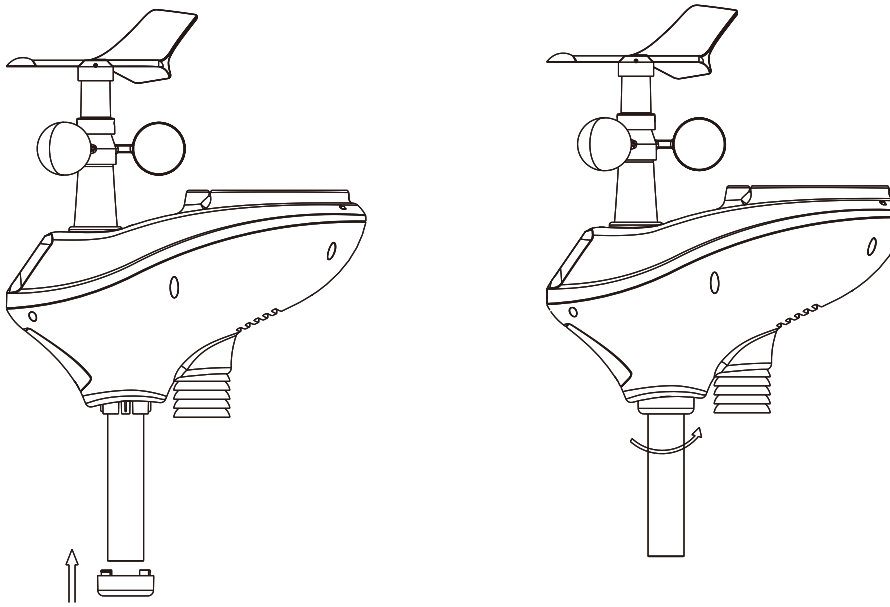


Figure 5

5.3.3 Install Batteries

Reference Figure 6. Locate the battery door on the bottom of the sensor array.

Turn the set screw counter clockwise to open the battery compartment. Insert the 3xAA batteries (not included). The LED indicator on the bottom of the sensor array will turn on for four seconds and normally flash once per 16 seconds (the transmission update period).

Close the battery door and tighten the set screw.

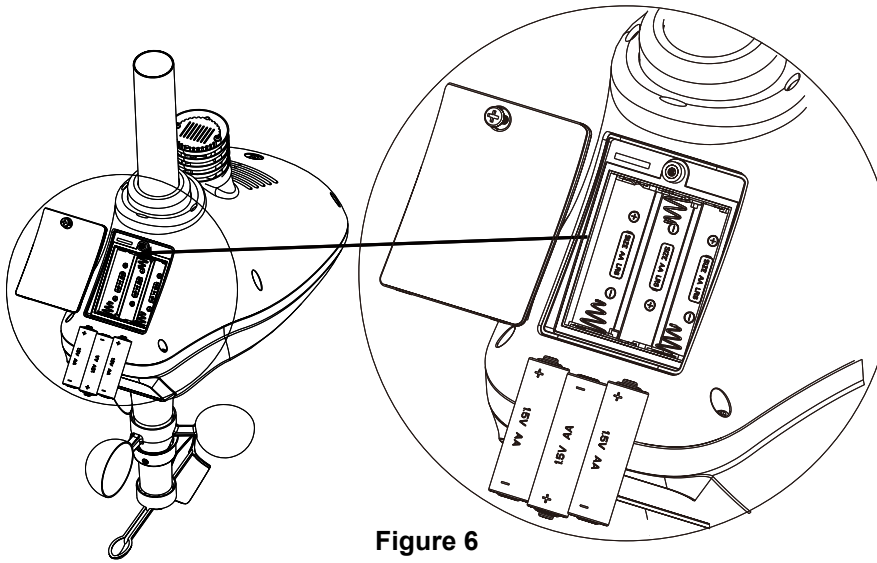


Figure 6

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.

5.3.4 Mount Weather Station

Fasten the mounting pole to your mounting pole or bracket (purchased separately) with the U-bolts, mounting pole brackets and nuts, as shown in Figure 7. Tighten the mounting pole to your mounting pole with the U-Bolt assembly. Make sure your mounting pole is as far away from the temperature sensor as possible, as shown in Figure 7.

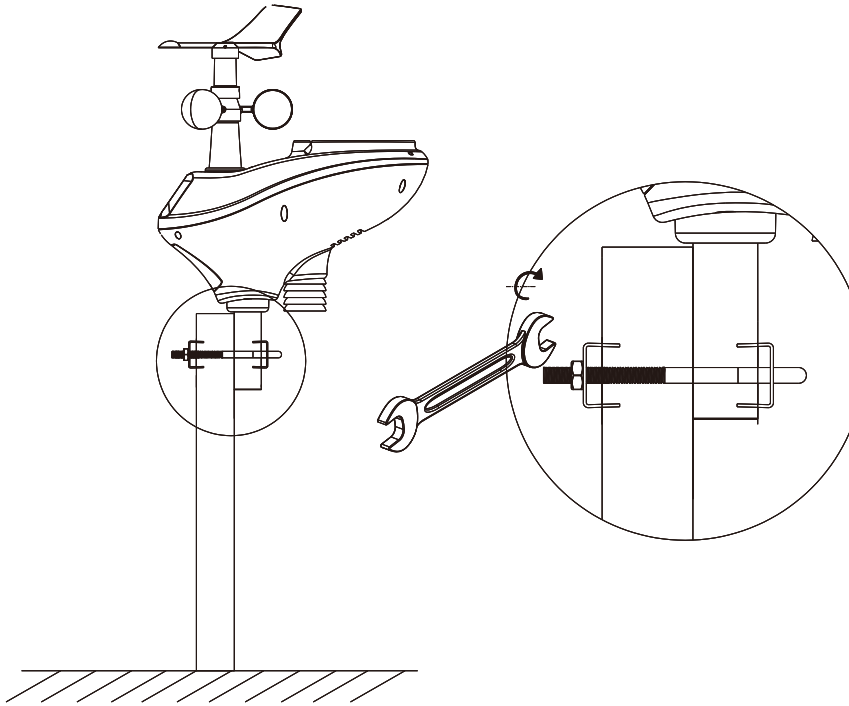


Figure 7

1. Reference Figure . Locate the four wind vane compass rose indicators of N, E, S, W (representing North, East, South and West). Align the compass rose direction upon final installation with a compass or GPS.

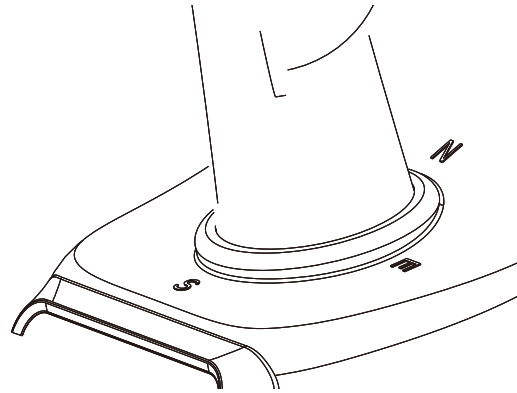


Figure 8

2. Reference Figure . Make sure the sensor array is completely level upon final installation. Failure to do so will result in inaccurate rain gauge readings.

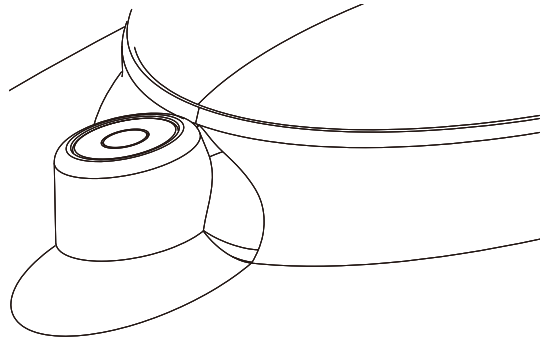


Figure 9

5.3.5 Reset Button and Transmitter LED

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

With an open ended paperclip, press and hold the **RESET BUTTON** for three seconds to completely discharge the voltage.

Take out the batteries and wait one minute, while covering the solar panel to drain the voltage.

Put batteries back in and resynchronize with console by powering down and up the console with the sensor array about 10 feet away.

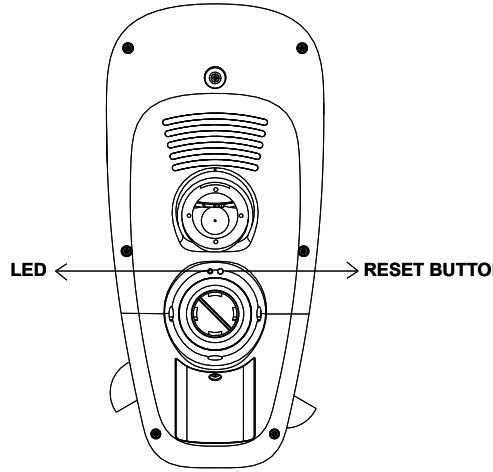


Figure 10

5.4 Best Practices for Wireless Communication

Note: To insure proper communication, mount the remote sensor(s) upright on a vertical surface, such as a wall. **Do not lay the sensor flat.**

Wireless communication is susceptible to interference, distance, walls and metal barriers. We recommend the following best practices for trouble free wireless communication.

1. **Electro-Magnetic Interference (EMI)**. Keep the console several feet away from computer monitors and TVs.
2. **Radio Frequency Interference (RFI).** If you have other 433 MHz devices and communication is intermittent, try turning off these other devices for troubleshooting purposes. You may need to relocate the transmitters or receivers to avoid intermittent communication.
3. **Line of Sight Rating.** This device is rated at 300 feet line of sight (no interference, barriers or walls) but typically you will get 100 feet maximum under most real-world installations, which include passing through barriers or walls.
4. **Metal Barriers.** Radio frequency will not pass through metal barriers such as aluminum siding. If you have metal siding, align the remote and console through a window to get a clear line of sight.

The following is a table of reception loss vs. the transmission medium. 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%

5.5 Display console

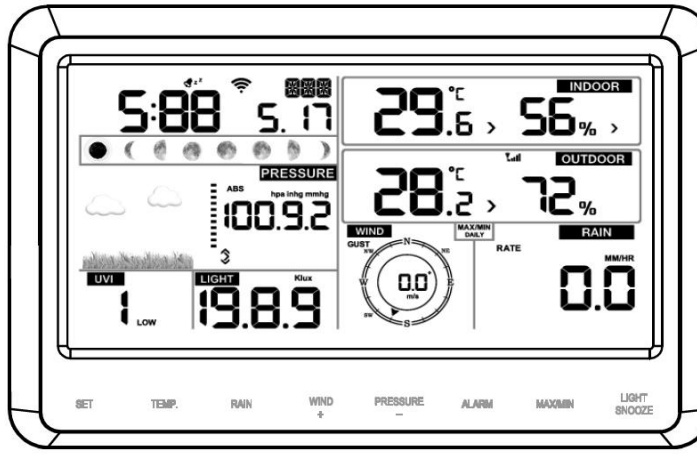


Figure 11

1. Insert the 5V AC adaptor into the back of the display console

Note: Place the outdoor sensor array about 5 to 10 feet from the display console and wait several minutes for the remote sensors to synchronize with the display console.

2. Insert 3 AAA batteries into the display console. Please insert the battery as blew figure 12:

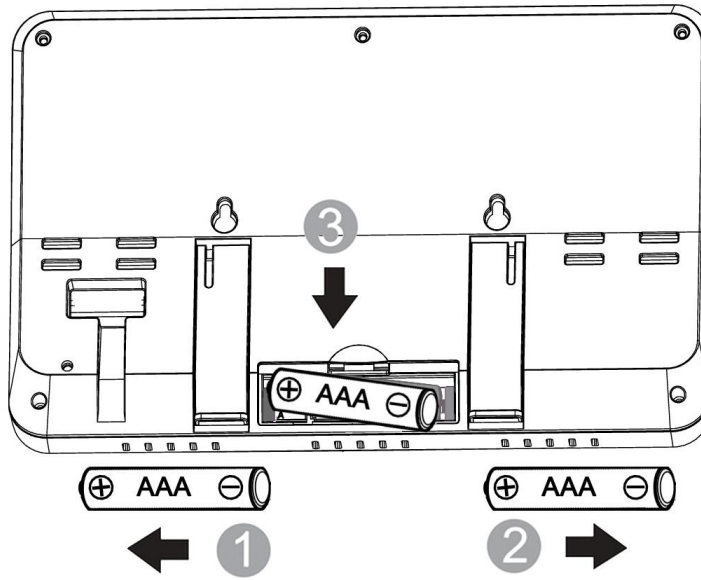


Figure 12

Note: The batteries are intended for back-up power only. The backlight will remain on for 5 seconds when on back up battery power only. Only when you use power adapter it will the back-light be continuously on.

3. Keep both sensor and the display console together for 15 minutes to lock in the sensor signals.
4. (Optional)-Spin the wind cups to simulate wind speed. Take the sensor to the sink and slowly drip water into the rain bucket to simulate rain.
5. After 15miuntes, follow the mounting instructions for proper placement of sensors.

   Note: Your display console should have readings in all sections. Wind and Rain will show 0's (connected) until wind or rian occur or are simulated.

   Note: If you only use battery to power up display console, you must press LIGHT/SNOOZE key to light up the LCD before press any other key.

5.5.1 Vertical Desk Stand

The console is best viewed above from a 20 to 30 degree angle.

In addition to the fold out desk stand on the back of the display, console, the console also includes a vertical desk stand to improve the viewing able on a desk, as shown in Figure 13.

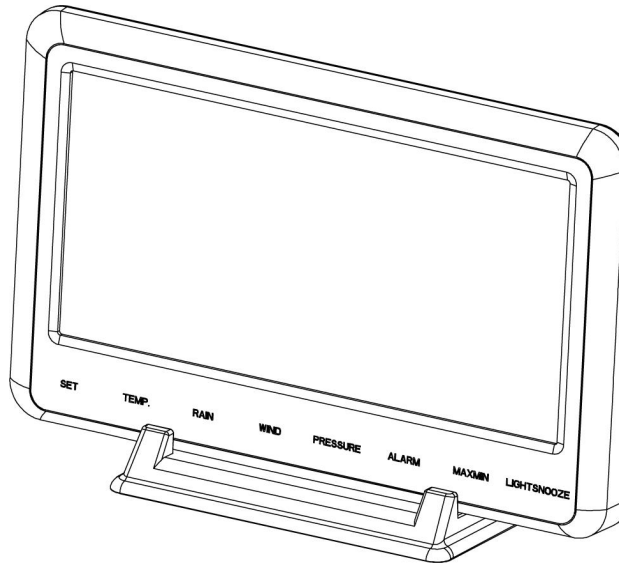
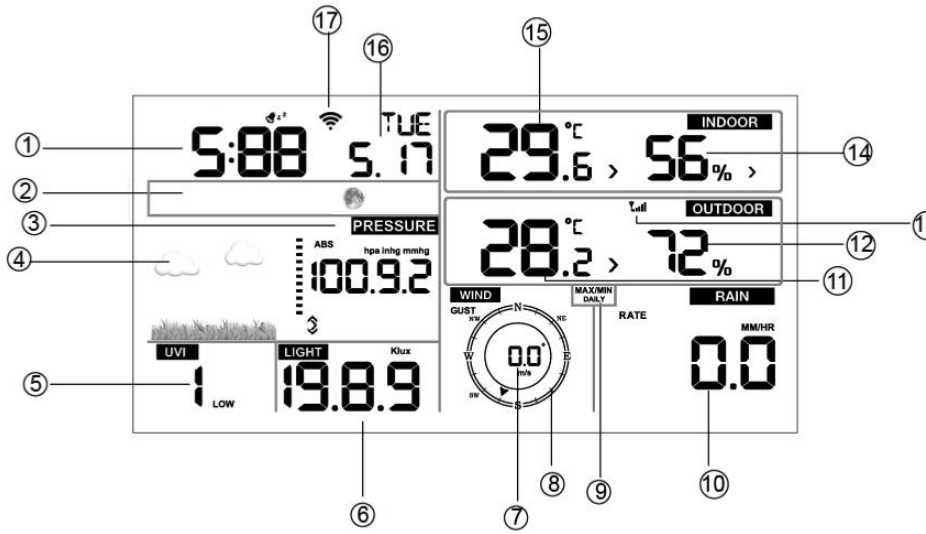


Figure 13

6. Display Console Operation

6.1 Screen Display



1.Time	10. Rain fall
2. Moon phase	11. Outdoor temperature
3. Barometric Pressure	12. Outdoor humidity
4. Weather forecast	13. RF icon
5. UV index	14. Indoor humidity
6. Light	15. Indoor temperature
7. Wind speed	16. Date
8. Wind direction	17. WIFI icon
9. MAX/MIN Daily	

Figure 14

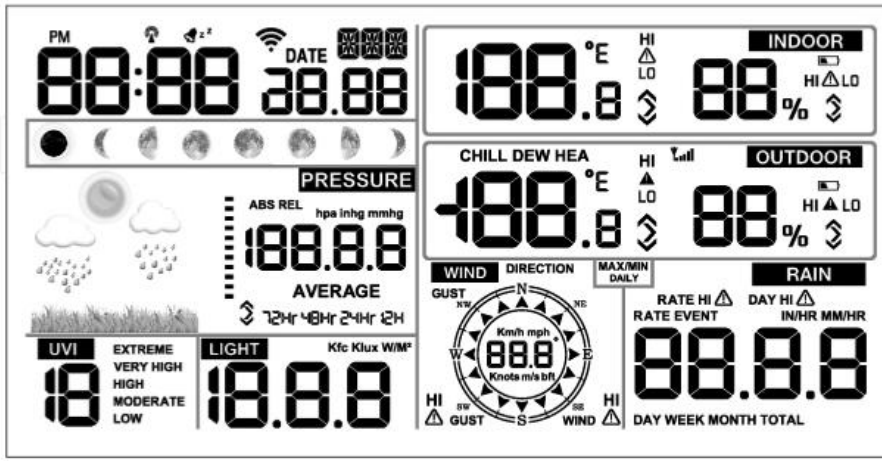
6.2 Initial Display Console Set Up

Note: The sensor array must be powered and updating before powering up the console, or the console will timeout searching for the sensors. Perform this step last.

Make certain the weather station sensor array is at least 3m from the console and within 100m of the console. If the weather station is too close or too far away, it will not receive a proper signal.

1. Insert the power adapter into the power jack of the console, and plug in the adapter. The LCD display will beep once and then light up. The unit will show software version number 2 seconds after power reset.

Then the unit will turn on all segments of the LCD for 3 seconds, the unit will start to register the outdoor channel for 3 minutes.



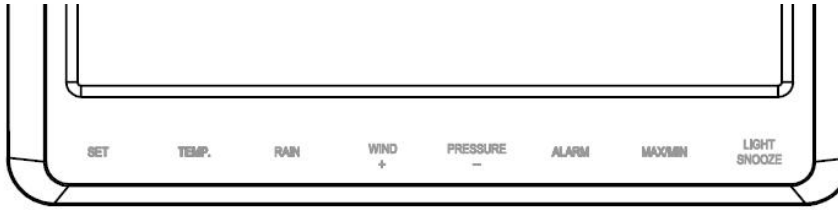
After initialization, the console will instantly display indoor temperature, humidity, barometer, tendency, date and time. The wind speed, wind direction, rain, and outdoor temperature and humidity will update on the display within a few minutes. The remote search icon will turn on：

Do not touch any buttons until the remote sensor reports in, otherwise the remote sensor search mode will be terminated and the search icon will turn off. When the remote sensor data has been received, the console will automatically switch to the normal mode, and all further settings can be performed.

If it does not update, please reference the troubleshooting guide in Section 11.

6.3 Key function

The console has eight keys for easy operation



Key	Description
SET	Hold this key to enter setting mode
TEMP.	Press this key to view wind Chill, Heat Index, Dew Point Temperature
RAIN	Press this key to view Rain Rate, event, Rain Day, Rain Week, Rain Month, and Rain total* Press the RAIN key 2s to reset current display rain*
WIND/ +	Press this key to view wind/gust and wind direction In Setting mode, pressing **WIND/+** key select the unit or scrolls the value; keeping press and holding **WIND/+** key for 2 second will increase/decrease digits in great steps.
PRESSURE/-	Press this key to view Absolute Pressure average of 12hr, 24hr, 48hr and 72hr Press and hold 2s this key to view the absolute and relative pressure In Setting mode, pressing **WIND/+** key select the unit or scrolls the value; keeping press and holding **WIND/+** key for 2 second will increase/decrease digits in great steps.
ALARM	Press this key to view the alarm value of Temperature / Humidity/rain rate/rain day/wind
MAX/MIN	Press this key to view the MAX/MIN value of Temperature / Humidity/rain rate/rain day/wind/UVI/LIGHT/Absolute Pressure
LIGHT /SNOOZE	Press this key to adjust LCD backlight brightness: HI/MID/OFF Hold LIGHT/SNOOZE key to register new transmitter

Figure 15

***Rainfall Readings**

Press RAIN key to view rain history:

- Rain rate: it forecast the rain per hour base on the recently 10 minute's rainfall. For example: the rainfall of recent 10 minutes is 12mm, the rain/hour is 12mm*6=72mm/h.
- Rain event: It start to record the rain event value form the rain falls, the rain

event is over and value reset to 0 if last 24 hour rainfall less 1mm and the last 1 hour no rainfall.

- Day: 24 hr period from 0:00 - 24:00.
- Week: defined by calendar week i.e. Sunday – Saturday.
- Month: defined by calendar Month i.e. January 1 - January 31.
- Total: running total since station was powered up

***Reset Rainfall History:**

- Reset week rain, will auto reset day rain
- Reset month rain, will auto reset week and day rain.
- Reset total rain, will auto reset month, week and day rain.

Note:

1) When power on, press **WIND/+** and **PRESSURE /-** key to reset the weather station and clear all records memory, and clears all user settings to default.
2) When power on, press **TEMP.** key to skip receive RF signal.
3) The setting procedure can be exited at any time by either pressing the **LIGHT /SNOOZE** key or waiting for the 30-second time-out to take effect.

6.4 Set mode

The Set Mode allows you to change date, time, units of measure and other important functions, as referenced in Figure 16.

To enter the Set Mode, press and hold the **SET** key for two seconds (**SET** + 2 seconds). To advance each command, press (do not hold) the **SET** key.

Command	Function	Description	Settings
SET + 2 seconds	BEEP	Turns on or off the beep with each keystroke	Press **WIND/+** or **PRSSURE/-** to toggle OFF and ON
SET	RST	Reset max/min daily at 12:00am (on) or manually (off)	Press **WIND/+** or **PRSSURE/-** to toggle OFF and ON
SET	24H	12/24 Hour Format	Press **WIND/+** or **PRSSURE/-** to toggle between 12 hour (12h) and 24 hour (24h) format
SET	HR	Hour of Day	Press **WIND/+** to increase. **PRSSURE/-** to decrease

SET	MIN	Minute of Day	Press **WIND/+** to increase. **PRSSURE/-** to decrease
SET	M-D	Month Day Format	Press **WIND/+** or **PRSSURE/-** to toggle between M-D (month/day) format and D-M (day/month) format
SET	Y	Year	Press **WIND/+** to increase and **PRSSURE/-** to decrease
SET	M	Month of Year	Press **WIND/+** to increase and **PRSSURE/-** to decrease
SET	D	Day of Month	Press **WIND/+** to increase and **PRSSURE/-** to decrease
SET	hPa	Barometric Pressure Units of Measure	Press **WIND/+** to toggle between inHg,mmhg and hPa
SET	PRESSURE REL	Relative Pressure Calibration	Press **WIND/+** to increase. **PRSSURE/-** to decrease. For details on relative barometric pressure calibration, reference Section 6.4.6.
SET	W/M^2	Light units of Measure	Press **WIND/+** to toggle between klux, kfc, and W/M^2
SET	°C	Temperature Units of Measure	Press **WIND/+** to toggle between °F and °C
SET	Km/h	Wind speed units of Measure	Press **WIND/+** to toggle between km/h, mph, knots, m/s and bft
SET	Mm	Rainfall units of Measure	Press **WIND/+** to toggle between mm and inch
SET	NTH	Northern Hemisphere (NTH) or southern Hemisphere (STH) select	Press **WIND/+** to toggle between Northern and southern Hemisphere
SET		Exit Set Mode	

Figure 16

6.4.1 BEEP:

- Press the **SET** key for 2 seconds to select the beep section, ON/OFF section digits will start flashing, press the **WIND/+** or **PRSSURE/-** key to select ON or OFF.

6.4.2 MAX/MIN Daily:

- Press the **SET** key twice to select the **MAX/MIN Daily** section, ON/OFF section digits will start flashing. Press the **WIND/+** or **PRSSURE/-** key to select ON or OFF . (Default ON. ON: Reset max/min daily at 12:00am).

6.4.3 Time / Date

- Press the **SET** key third time to select the 12/24 hour format section (default: 24hr).
- Press the **SET** key fourth time to select the hour section.
- Press the **SET** key fifth time to select the minutes section.
- Press the **SET** key sixth time to select DD-MM or MM-DD format. (Default DD-MM format)
- Press the **SET** key seventh time to select year.
- Press the **SET** key eighth time to select month.
- Press the **SET** key ninth time to select day.

Note: Press the **WIND/+** or **PRSSURE/-** key to set the value.
Note: If user to change minute value, second will auto clear to 0.

6.4.4 Pressure

1) Viewing Absolute vs. Relative Pressure

To switch between absolute and relative pressure, press and hold the [PRESSURE -] button for two seconds.

Absolute pressure is the measured atmospheric pressure, and is a function of altitude, and to a lesser extent, changes in weather conditions.
Absolute pressure is not corrected to sea-level conditions.
Relative pressure is corrected to sea-level conditions.

2) 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).

3) Viewing Pressure History

Press the [PRESSURE -] button to view the 12 hour, 24 hour, 48 hour and 72 hour pressure average.

4) Relative Pressure Calibration Discussion

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

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

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

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

6.4.5 Light

- Press the **SET** key 12th to select light unit (Klux, kfc, w/m2; default: w/m2).

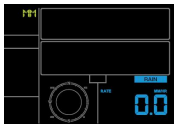
6.4.6 Temperature

- Press the **SET** key 13th to select in/outdoor temperature unit (C or F; default: C).
- In normal model, press the **TEMP.** key to view wind Chill, Heat Index, Dew Point Temperature. Press the **TEMP.** key for 5 second, will register new transmitter.

6.4.7 Wind speed

- Press the **SET** key 14th to select wind speed unit (km/h, mph, knots, m/s, bft; default: km/h).
- In normal mode, press and release the **WIND/+** key to view the wind, gust and wind direction.

6.4.8 Rain



- Press the **SET** key 15th to select rainfall unit (in or mm; default: mm).
- In normal mode, press and release the RAIN key to view rain of rate, event, day, week, month and total.
- Press the **RAIN** key for 2 seconds to reset current display rain.

***Rainfall Readings**

- Rain rate: it forecast the rain per hour base on the recently 10 minute's rainfall. For example: the rainfall of recent 10 minutes is 12mm, the rain/hour is 12mm*6=72mm/h.
- Rain event: It start to record the rain event value form the rain falls, the rain event is over and value reset to 0 if last 24 hour rainfall less 10mm and the last 1 hour no rainfall.
- Day: 24 hr period from 0:00 - 24:00.
- Week: defined by calendar week i.e. Sunday – Saturday.
- Month: defined by calendar Month i.e. January 1 - January 31.
- Total: running total since station was powered up

***Reset Rainfall History:**

- Reset week rain, will auto reset day rain
- Reset month rain, will auto reset week and day rain.
- Reset total rain, will auto reset month, week and day rain.

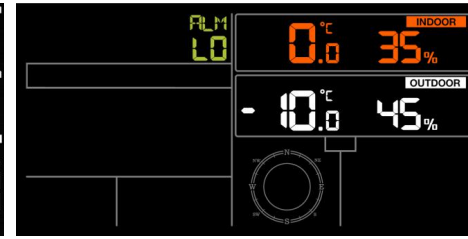
6.4.9 Moon phase

- Press the **SET** key 16th to Northern or Southern Hemisphere select.

6.5 Alarm mode

6.5.1 View Alarm value

Press and release **ALARM** key to display high alarm，Press **ALARM** key again to display low alarm. Press **ALARM** key third time or press **LIGHT /SNOOZE** key return to normal mode.



In alarm mode:
- Press **RAIN** key to shift display rain rate or day rain alarm data.

- Press **WIND/+**key to shift display wind or gust alarm data.

6.5.2 Alarm setting mode:

Hold the **ALARM** key for 2 seconds to enter alarm setting mode:

1. **Time of Day Alarm**. The hour will begin flashing. Press the **WIND/+** or **PRESSURE/-** key to change the hour value. Press the **SET** key to set the minute value. The minute will begin flashing. Press the **WIND/+** or **PRESSURE/-** key to increase or decrease the minute value.
2. Press the ALARM key to turn the alarm on or off (if the alarm is enabled, the alarm icon will be turned on).

3. **Indoor Temperature High Alarm.** Press the SET key to set the indoor temperature high alarm. The indoor temperature will begin flashing. Press the **WIND/+** or **PRESSURE/-** key to change the indoor temperature alarm value.

4. Press the ALARM key to turn the alarm on or off (if the alarm is enabled, the alarm icon will be turned on).

5. **Indoor Temperature Low Alarm.** Press the SET key to set the indoor temperature low alarm. The indoor temperature will begin flashing. Press the **WIND/+** or **PRESSURE/-** key to change the indoor temperature alarm value.
6. Press the ALARM key to turn the alarm on or off (if the alarm is enabled, the alarm icon will be turned on).

7. **Indoor Humidity High Alarm.**
8. **Indoor Humidity Low Alarm.**
9. **Outdoor Temperature High Alarm.**
10. **Outdoor Temperature Low Alarm.**
11. **Outdoor Humidity High Alarm.**
12. **Outdoor Humidity Low Alarm**
13. **Wind High Alarm**
14. **Wing gust High Alarm**
15. **Rain rate high Alarm**
16. **Rain day high Alarm**
17. Press the **WIND/+** or **PRESSURE/-** to adjust alarm values.
18. Press the **SET** key to confirm & move to the next item.
19. Press the **ALARM** key to on/off the alarm

Note: when alert is triggered, the current triggering source icon for time, icon for high value and icon for low value will be flashing, indicating alert is triggered.

Note: press **ALARM** key third time back to normal mode or press **LIGHT /SNOOZE** key back to normal mode.

When a weather alarm condition has been triggered, the alarm will sound for 120 seconds and the corresponding icon will flash until the weather condition is no longer present. Press any key to mute the alarm.

You can also set a time of day alarm using the same method.

6.5.3 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

6.6 Max/min mode

6.6.1 Press and release **MAX/MIN** key to display MAX data

- Press **TEMP.** key to view wind chill, heat index and dew point max.
- Press **RAIN** key to view rain rate, rain day, rain week and rain month max.
- Press **WIND/+** to view wind and gust max.
- Press **PRESSURE/-** to hold 2 seconds to view pressure absolute and relative

max.

6.6.2 Press again to display min data

- Press **TEMP.** key to view wind chill and dew point min.
- Press **PRESSURE/-**to hold 2 seconds to view pressure absolute and relative min.

Note: press and hold 2s MAX/MIN button to reset all max or min.

press **MAX/MIN** key third time back to normal mode or press **LIGHT /SNOOZE** key back to normal mode.

6.7 Calibration mode

Hold the **TEMP.** and **MAX/MIN** key together for 5 seconds to enter calibration mode.

- Press the **WIND/+**and **PRESSURE/-** key to adjust values.
- Press the **SET** key to confirm & move to the next item.
- Press the **ALARM** key to reset any adjusted value.
- Press the **LIGHT /SNOOZE** key at any time to exit.

6.7.1 Calibration Order:

1. Indoor temperature offset calibrated (range +/-5˚C, default: 0 degrees)
2. Indoor humidity offset calibrated (range +/-10%)
3. Outdoor temperature offset calibrated (range +/-5˚C, default: 0 degrees)
4. Outdoor humidity offset calibrated (range +/-10%)
5. Absolute pressure offset calibrated (range +/-50hpa)

6. Wind direction offset calibrated (adjust by degree)
7. Wind speed factor adjust, default 100% (range 50% to 150%)
8. Rain factor adjust, default 100% (range 50% to 150%)

6.8 Other Features

6.8.1 Factory Reset/Clear Memory

To restore the console to factory default, perform the following steps:

1. Remove the power from the console by removing the batteries and disconnecting the AC adapter.
2. Apply power by connecting the AC adapter.
3. Wait for all of the segments to appear on the screen,.
4. Press and hold the **WIND/+** and **PRESSURE/-** keys at the same time until the console power up sequence is complete (about 5 seconds).
5. Replace the batteries.

6.8.2 Register New Transmitter

Press and hold the **LIGHT /SNOOZE** button for 5 seconds, and the console will re-register the wireless sensor.

6.8.3 Backlight (constant backlight requires operation with AC adapter.)

1) With AC adaptor.

The backlight can only be continuously on when the AC adapter is permanently on. When the AC adapter is disconnected, the backlight can be temporarily turned on.

Press the **LIGHT SNOOZE** key to adjust the brightness between High, Low and Off.

2) Without AC adaptor

To reduce power consumption, the display console will automatically enter sleep mode and will not send data to the Internet if no key is pressed for 15s. Hold the **LIGHT /SNOOZE** key in sleep mode or plug in the DC adapter wake up equipment.

6.8.4 Tendency indicators

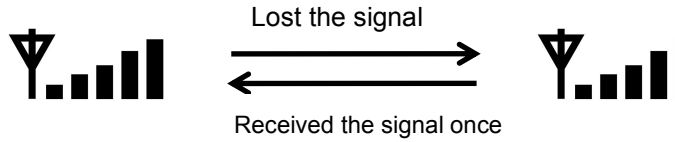
Tendency arrows allow you to quickly determine of temperature or pressure are rising and falling in a three hour update period, updated every 30 minutes.

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

6.8.5 Wireless Signal Strength Indicator

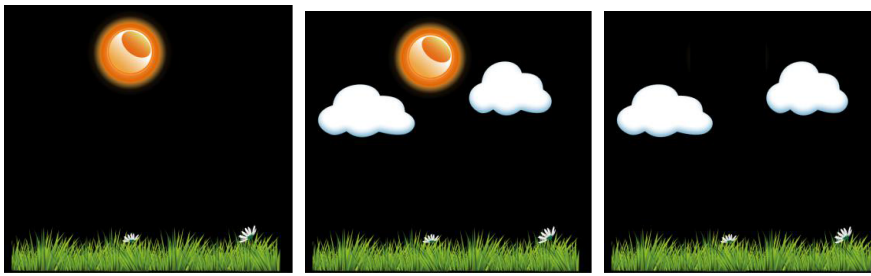
Tendency indicators		Humidity	Temperature	Pressure
↗	Rising	Rising > 3%	Rising >= 1C/2F	Rising > 1hpa
→	Steady	Change <= 3%	Change < 1C/2F	Change <= 1hpa
↘	Falling	Falling > 3%	Falling >= 1C/2F	Falling > 1hpa

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.



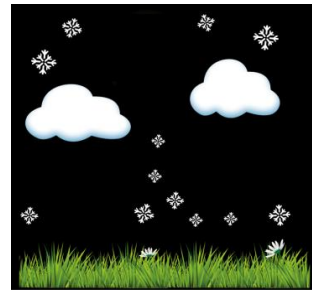
6.8.6 Weather forecast

There are six color forecast icons use changing atmospheric pressure to predict weathers conditions for the next 6-hours. Please allow at least one month for the weather station to learn the barometric pressure over time.

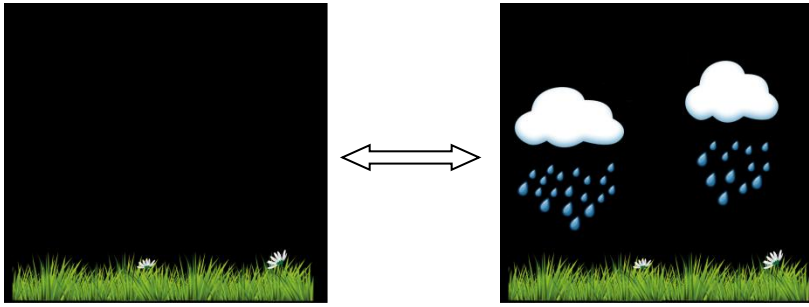


Sunny Partly sunny Cloudy

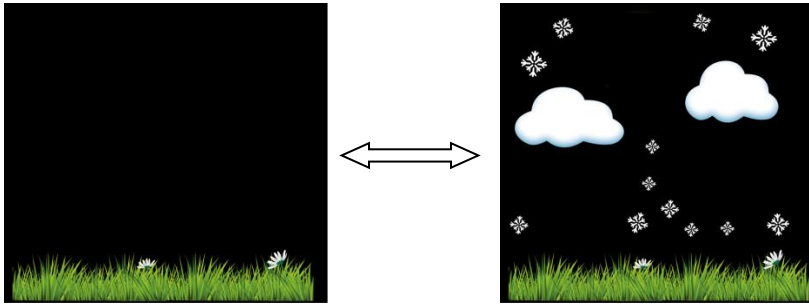
Rainy



Snowy



Storm rainy



Storm Snowy

Note: Snowy icon will appear in place of rainy icon when the outdoor temperature is below 32 F (0˚C).

Weather Forecasting Description and Limitations

In general, if the rate of change of pressure increases, the weather is generally improving (sunny to partly cloudy). If the rate of change of pressure decreases, the weather is generally degrading (cloudy, rainy or stormy). If the rate of change is relatively steady, it will read partly cloudy.

The reason the current conditions do not match the forecast icon is because the forecast is a prediction 24-48 hours in advance. In most locations, this prediction

is only 70% accurate and it is a good idea to consult the National Weather Service for more accurate weather forecasts. In some locations, this prediction may be less or more accurate. However, it is still an interesting educational tool for learning why the weather changes.

The National Weather Service (and other weather services such as Accuweather and The Weather Channel) have many tools at their disposal to predict weather conditions, including weather radar, weather models, and detailed mapping of ground conditions.

6.8.7 Snooze

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

7. Specification:

Outdoor data

Transmission distance in open field	:	100m(330 feet)
Frequency	:	433MHz/868MHz/915MHz
Temperature range	:	-40˚C--60˚C
Accuracy	:	+ / - 1 °C
Resolution	:	0.1˚C
Measuring range rel. humidity	:	10% ~ 99%
Accuracy	:	+/- 5%
Rain volume display	:	0 – 6000mm (show --- if outside range)
Accuracy	:	+/- 10%
Wind speed	:	0-50m/s (0~100mph) (show --- if outside range)
Accuracy	:	+/- 1m/s (wind speed< 5m/s) +/-10% (wind speed > 5m/s)
Light	:	0-200k Lux
Accuracy	:	+/- 15%
Measuring interval thermo-hygro sensor	:	16sec

Indoor data

Indoor temperature range	:	-10˚C--60˚C (14℉ to + 140℉) (show --- if outside range)
Resolution	:	0.1˚C
Measuring range rel. Humidity	:	10% ~ 99%
Resolution	:	1%
Measuring range air pressure	:	700-1100hpa (20.67inHg – 32.5inHg)
Accuracy	:	+/-3hpa
Resolution	:	0.1hpa (0.01inHg)
Alarm duration	:	120 sec

Power consumption

- Base station: 5V DC adaptor (included), Power Consumption: 0.5 Watts (1.25 Watts during WiFi configuration mode)
- Base station: 3 x AAA batteries (not included)
- Remote sensor: 3 x AA batteries (not included), The primary power source is the solar panel. The batteries provide backup power when there is limited solar energy

8. Live Internet Publishing

This weather station sends data to three free hosting services:

Hosting Service	Website	Description
Weather Undergound	WeatherUndeground.com	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.

WeatherBug Community	backyard.weatherbug.com	WeatherBug Community is an extension of the WeatherBug community of weather stations. WeatherBug is a brand owned by Earth Networks that provides live weather data and maintains a mesoscale network of over 8,000 weather stations.
Weather Cloud	WeatherCloud.net	Weathercloud is a real-time weather social network formed by observers from around the world.

This weather station sends data to the Internet using your WiFi connection.

8.1 Connecting the Weather Station Console to WiFi

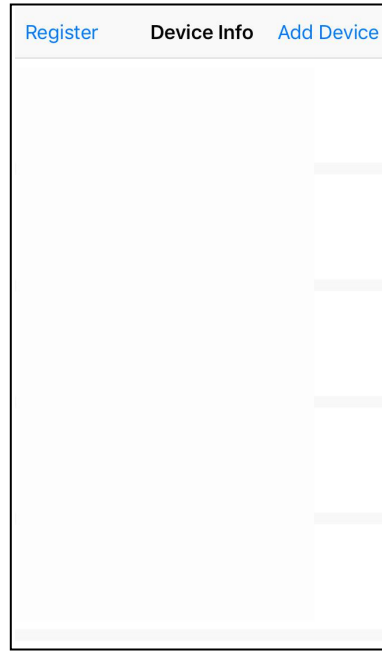
The WiFi feature only works when plugged into AC power due to higher energy requirements.

To connect the weather station to WiFi, you must first download the application from one of the following choices:

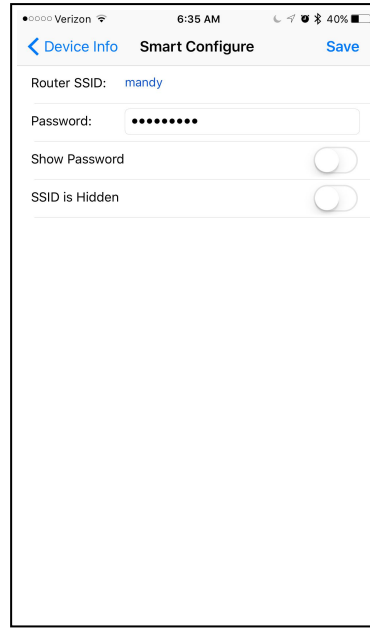
- Apple App Store
- Google Play Store

1) From your mobile device, visit the Apple App Store or Google Play Store and search for the "**WS Tool**" application. Download this application to your mobile device.

2) Run the WS Tool application, and select **Add Device**, as shown in below figure.



1. Make sure your mobile device is connected to your WiFi network. Enter the password for your router, and select Save, as shown in below figure.

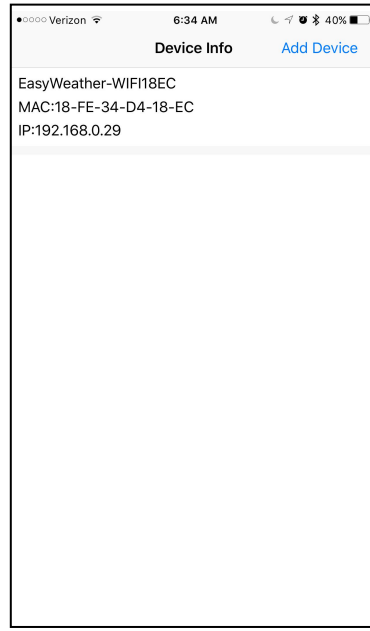


2. If the WiFi icon is not flashing rapidly, (1) press and hold the RAIN and ALARM buttons at the same time for four seconds. (2) The WiFi icon will begin flashing rapidly, indicating the console is searching for your WiFi network.

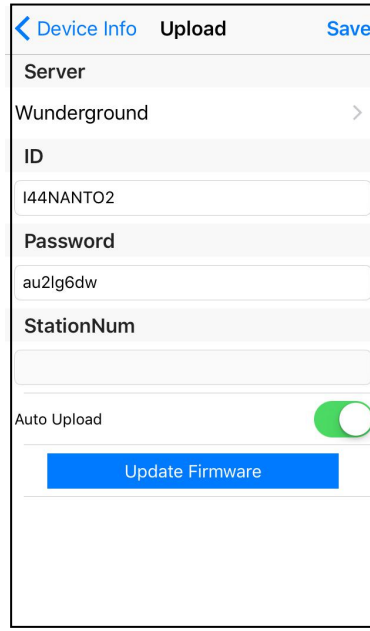
Wi-Fi icon: 

1) Not connected routers, don't show;
2) No network connection router, slow flash;
3) Connect the router with network, long bright;
4) Smart configure mode, fast flash.

3. Once the console has connected to your WiFi network, the devices Mac address and IP address will be displayed, as shown in below figure.



4. Register Enter your Wunderground.com and WeatherCloud.net Station ID, Password and StationNum (see Section 9)



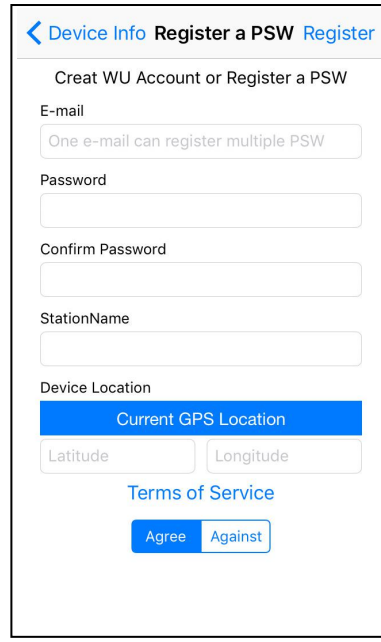
Now your weather station is connected for weather server. Download WU app to check your weather station records.

9. Registering with WeatherUnderground.com, WeatherBug.com and WeatherCloud.net

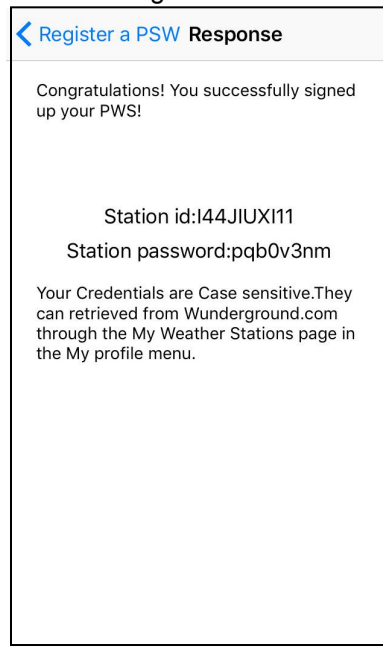
9.1 WeatherUnderground.com

9.1.1 Register through WS TOOL

Run the WS Tool application, and select **Register**, as shown in below figure

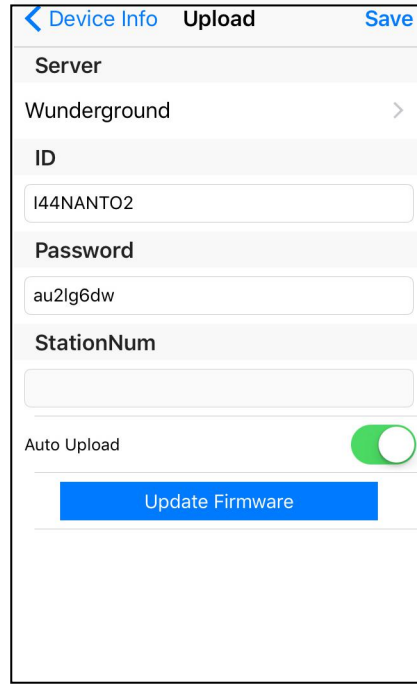


Fill the information and select **Register**. If register successfully, the Station ID and Password will shown in below figure.



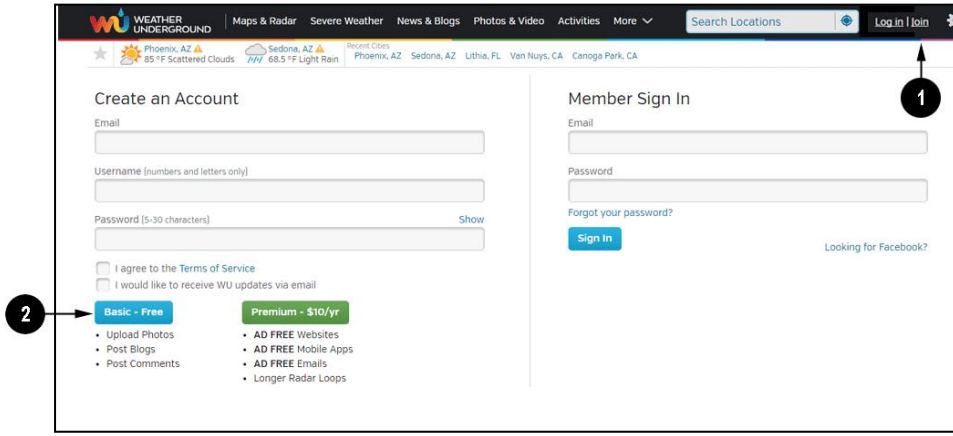
Make a note of the Station ID and Password, Enter the Station ID, Password and

Station Number (StationNum) into the WS Tool.

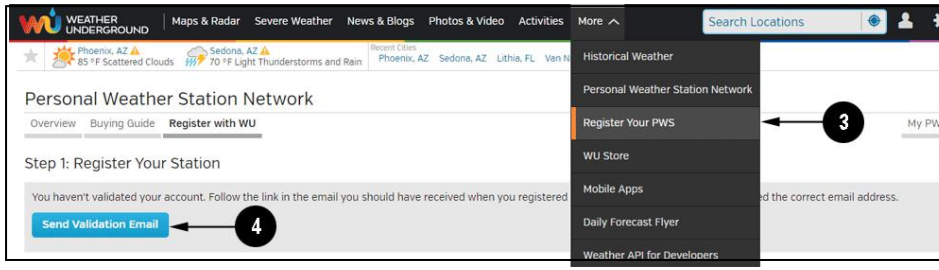


9.1.2 Register through WU website

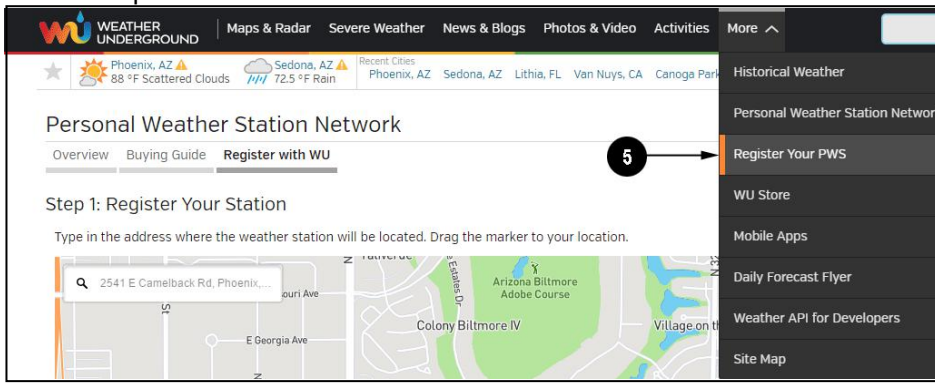
Visit Wunderground.com and select the **Join** link at the top of the page. Select the **Free** sign up option.



1. Select **More | Register Your PWS**.
2. Click **Send Validation Email**. Respond to the validation email from Wunderground (it may take a few minutes).



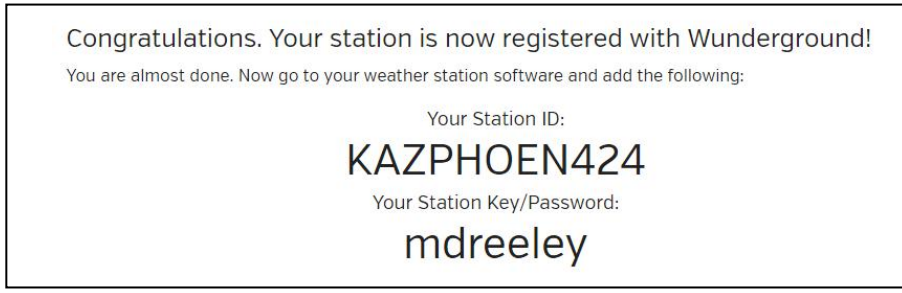
3. Select More | Register Your PWS again and enter all of the information requested.



4. After registering your station, make a note of the following:
   - Station ID
   - Station Key / Password

Enter the Station ID (ID), Station Key (Password) and Station Number (StationNum) into the WS Tool.

Below figure is an example, and your station ID and password will be different.



Note: Your station ID will have the form: KSSCCCC###, where K is for USA station (I for international), SS is your state, CCCC is your city and ### is the

station number in that city.

In the example above, KAZPHOEN424 is in the USA (K), State of Arizona (AZ), City of Phoenix (PHOEN) and #424.

Viewing your Data on Wunderground.com

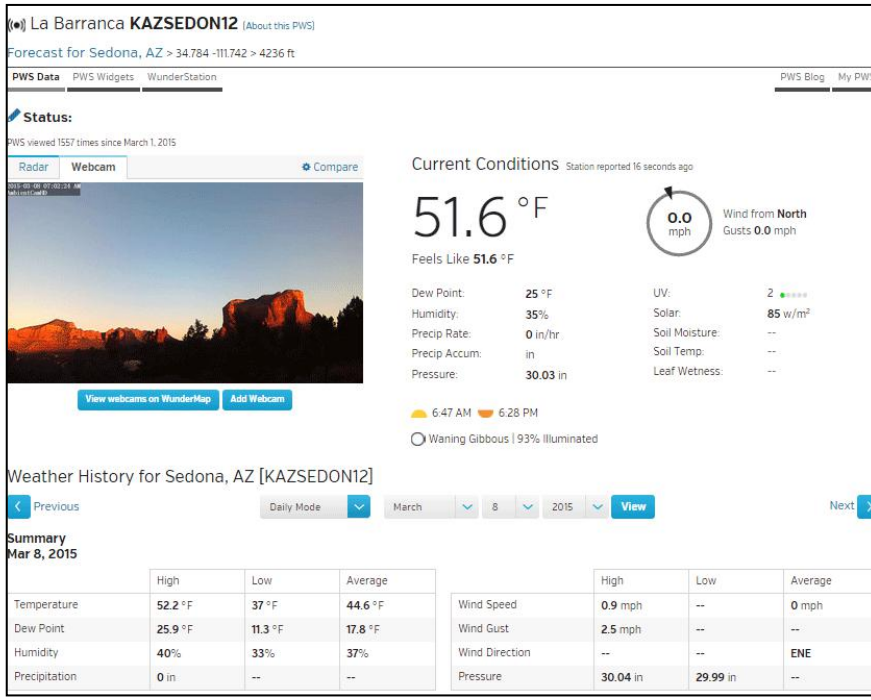
There are several ways to view your data on Wunderground:

Web Browser

Visit:

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

where **STATIONID** is your personal station ID (example, KAZSEDON12).



WunderStation iPad App

Visit:

http://www.WunderStation.com

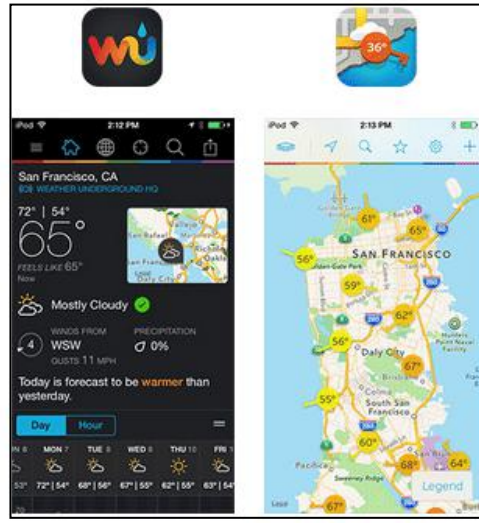
to download the WunderStation iPad app.

Mobile Apps

Visit:

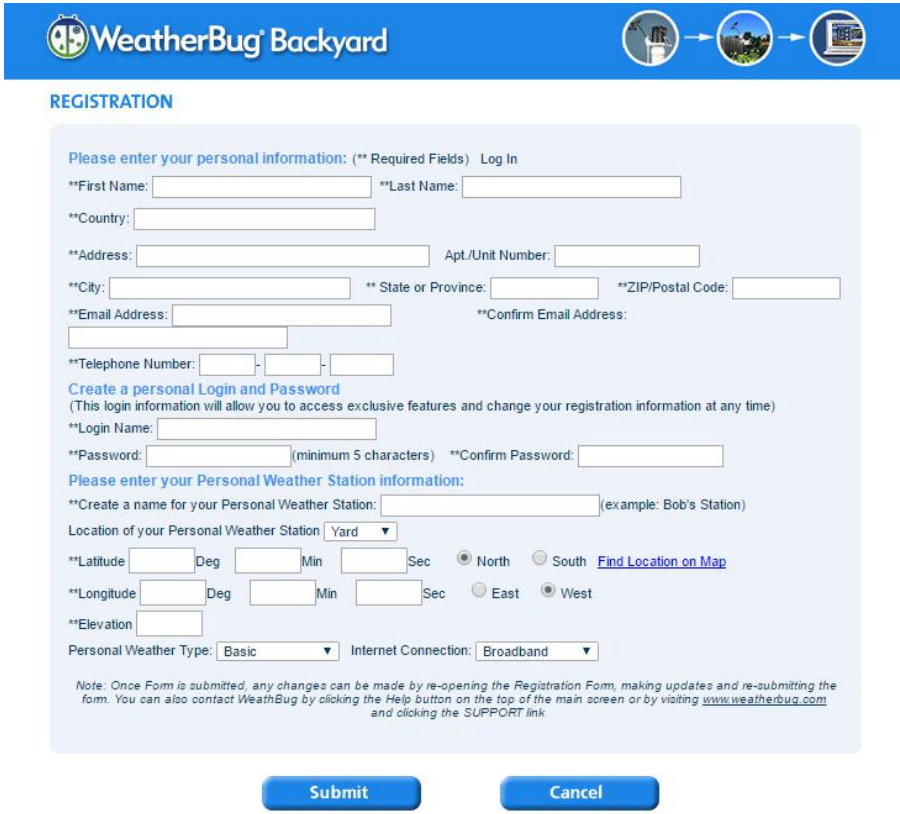
http://www.wunderground.com/download/index.asp

for a complete list of Mobile apps for iOS and Android. Alternately, you can find your data on your mobile device's web browser.



9.2 WeatherBug.com

Visit http://pws.ensb.us/ and **Click here** to register your station.



After registering your station, make a note of the following:

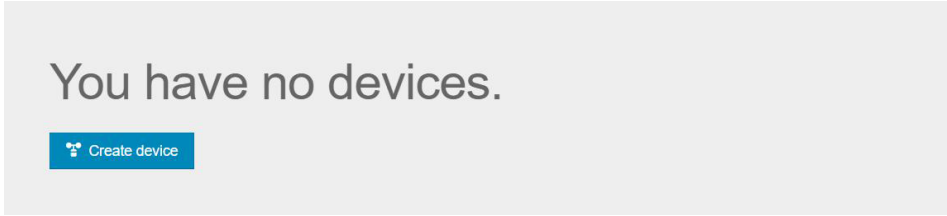
- UserName
- Password
- Your Publisher ID
- Your Station Number

Enter the Publisher ID (ID), Password and Station Number (StationNum) into the Ambient Tool.

9.3 WeatherCloud

1. Visit WeatherCloud.net and enter a Username, Email and Password.

2. Respond to the validation email from WeatherCloud (it may take a few minutes).



3. Select **Create Device** and enter your weather station information. After registering your station, make a note of the following:

- Weathercloud ID
- Key

Enter the Weathercloud ID (ID), Key (password) into the Ambient Tool. Leave the Station Number (StationNum) blank.

10. Maintenance

1. Clean the rain gauge once every 3 months as follows.

   Step 1: Make a note of the current rain totals by referencing the calibration screen (reference Section **6.7**). You will need to re-enter these values after the calibration procedure it complete.

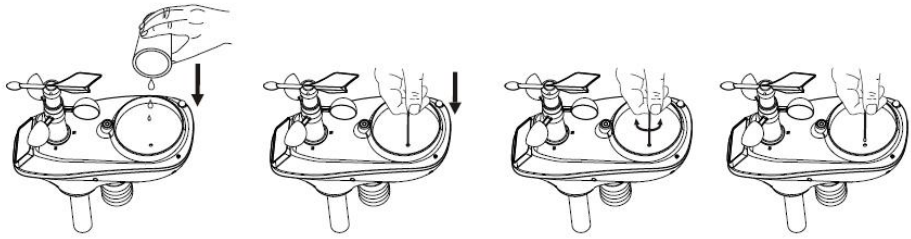
   Step 2: Pour water into the rain collector to moisturize the dirt inside rain bucket.

Step 3: Use an approximately 3 inch (80 mm) long cotton swab, and push the cotton tip through the rain collector hole until is reaches the self emptying mechanism, and press until the mechanism no longer rotates.

Step 4: Rotate the cotton swab back and forth, removing dirt from the tipping mechanism and rain collector hole.

Step 5: Remove the cotton swab and flush with water to remove any remaining dirt.

Step 6: Re-enter the rain totals recorded in Step 1.

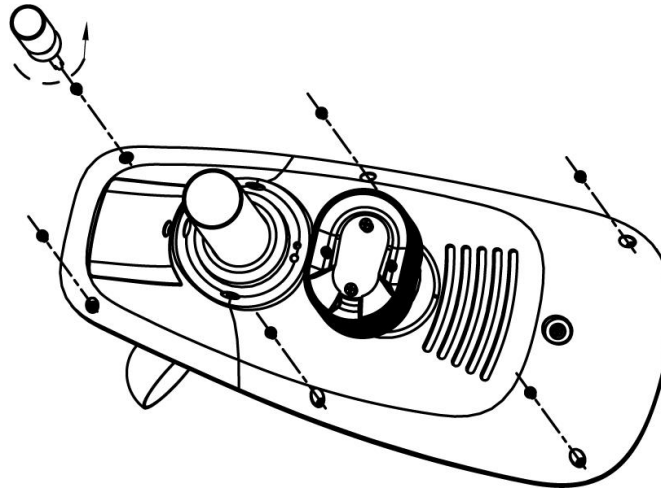


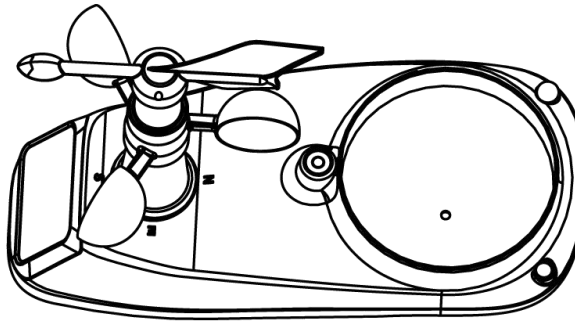
2. Clean the solar radiation sensor every 3 months with water and towel.
3. Replace rechargeable batteries every 2 to 3 years.

10.1 Advanced Rain Gauge Cleaning

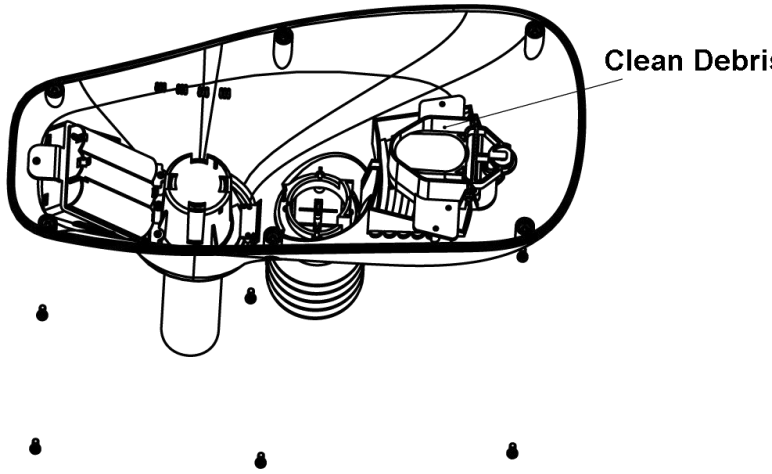
If the rain gauge stops updating, it is possible for spiders and other insects to nest inside the sensor array housing and interfere with the rain gauge mechanism.

1. Remove the six screws on the bottom of the sensor array..
2. **CAREFULLY** separate the top housing from the bottom housing. They cannot be completely separated due to wires. **DO NOT STRESS THE WIRES**. Open the sensor housing slightly, like a clam shell.
3. Clean any debris and spider webs, as shown in below figure.





Do not stress wires



11. Southern Hemisphere - Wind Direction Re-Calibration

Product: Professional Wireless Weather Station
This weather station can be used in both the Northern and Southern Hemispheres.

The cardinal directions (N, S, E, W) molded on the body of the outdoor sensor are indicators for the Northern Hemisphere only. For Southern Hemisphere installations, ignore these and face the solar panel to the North when it comes to installing the outdoor sensor.

Wind Direction
Recalibration: The following procedure is a recalibration guide for the Southern Hemisphere.

Step 1: Attach the wind vane to the outdoor sensor as described in the User Manual. Note, the wind vane and the shaft have a flat side and must be lined up together.

Step 2: Insert the batteries in the battery compartment as described in the User Manual.

Step 3: Align the wind vane pointer with the 'S' marker on the molded body of the outdoor sensor. Use sticky tape or similar to prevent movement.

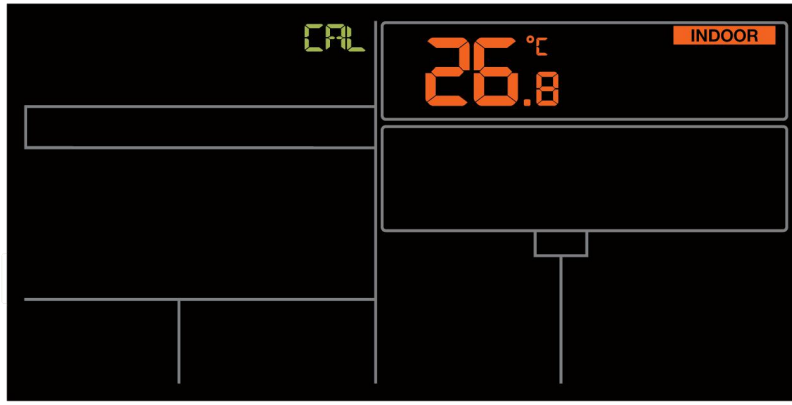
This is to simulate a North wind direction. Refer photo.

Step 4: Connect the power adapter to the LCD Screen's power socket. The display will then power up.

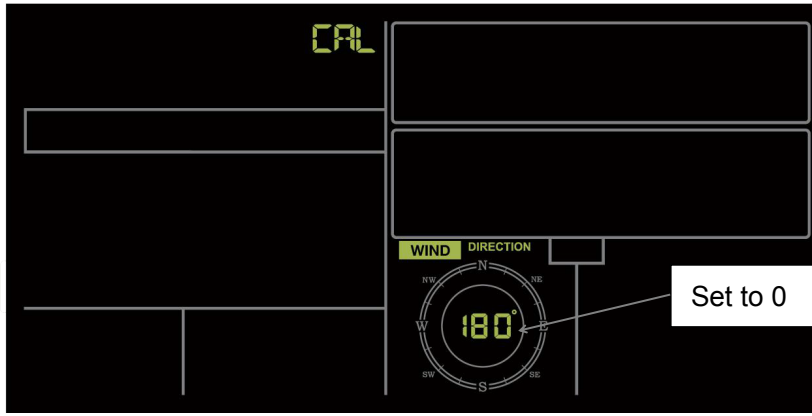
The LCD will begin to register the outdoor sensor and receive weather data. Refer photo.

Note, the wind direction will read approximately 180º S. This needs to be recalibrated for the Southern Hemisphere.

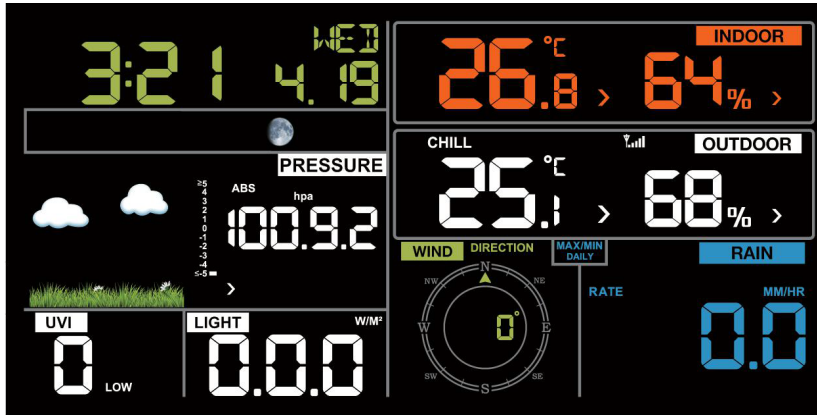
Step 5: Press the TEMP Key and MAX/MIN key to enter calibration mode. Refer photo.



Use the Set Key switch to the Wind Direction calibration value which will be approximately 180º. This value is for the Northern Hemisphere.



Use the WIND /+ and PRESSURE/- Keys to set this value to 0°.
Press the Return Key to go back to the Normal Display Mode. The wind direction should now read 0° North. Refer photo.



Make sure you remove the sticky tape from the wind vane.

Step 6: Install the Outdoor Sensor outside (and in a sunny position) and face the solar panel North.

12. Troubleshooting Guide

Problem	Solution
Outdoor sensor array does not communicate to the display console.	The 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 Section 5.3. With an open ended paperclip, press the reset button for 3 seconds to completely discharge the voltage. Take out the batteries and wait one minute, while covering the solar panel to drain the voltage. Put batteries back in and resync the console with the sensor array about 10 feet away. The LED next to the battery compartment will flash every 16 seconds. If the LED is not flashing every 16 seconds… Replace the batteries in the outside sensor array. If the batteries were recently replaced, check the polarity. If the sensor is flashing every 16 seconds, proceed to the next step. There may be a temporary loss of communication due to reception loss related to interference or other location factors, 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).
Temperature sensor reads too high in the day time.	Make certain that the sensor array is not too close to heat generating sources or strictures, such as buildings, pavement, walls or air conditioning units. Use the calibration feature to offset installation issues related to radiant heat sources. Reference Section 6.7.
Relative pressure does not agree with official reporting station	You may be viewing the absolute pressure, not the relative pressure. Select the relative pressure. Make sure you properly calibrate the sensor to an official local weather station. Reference Section 6.4.4 for details.

Rain gauge reports rain when it is not raining	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.
Data not reporting to Wunderground.com	1. Confirm your password or key is correct. It is the password you registered on Wunderground.com. Your Wunderground.com password cannot begin with a non-alphanumeric character (a limitation of Wundeground.com, not the station). Example, $oewkrf is not a valid password, but oewkrf$ is valid. 2. Confirm your station ID is correct. 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 Check your router firewall settings. The console sends data via Port 80.
No WiFi connection	1. Check for WiFi symbol on the display. If wireless connectivity is successful the WiFi icon  will be displayed in the time field. 2. Make sure your modem WiFi settings are correct (network name, and password). 3. Make sure the console is plugged into AC power. The console will not connect to WiFi when powered by batteries only. 4. The console only supports and connects to 2.4 GHz routers. If you own a 5 GHz router, and it is a dual band router, you will need to disable the 5 GHz band, and enable the 2.4 GHz band. 5. The console does not support guest networks.