HP2000

7-In-1 Ultra WiFi Internet Wireless Weather Station

Manual EN

Support/updates/manuals/spare parts:
www.froggit.de

1 Table of Contents

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:** If you are mounting the weather station to a house or structure, consult a licensed electrician for proper grounding. A direct lightning strike to a metal pole can damage or destroy your home.

⚠ **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 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:

QT	Item Description
1	Display Console
1	Outdoor Sensor Array with built-in: Thermo-hygrometer / Rain Gauge / Wind Speed Sensor/ Wind Direction Sensor, Light and UV sensor, Solar panel
1	AC adapter
1	White O-ring
1	User manual (this manual)

Table: Package content

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

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 console operates using an AC adapter. The included adapter is a switching-type adapter and can generate a small amount of electrical interference with the RF reception in the console, when placed too close to the console. Please keep the console display at least 2 ft. or 0.5 m away from the power adapter to ensure best RF reception from the outdoor sensor package.

4 Overview

4.1 Display console

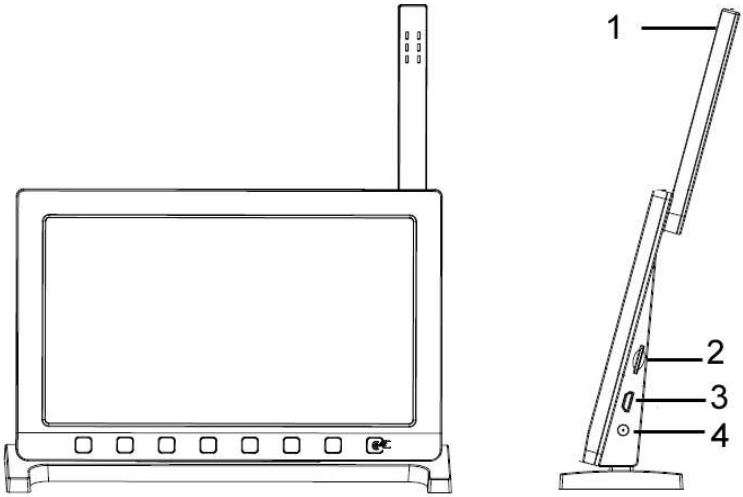


Figure 1: Display console

1	Temperature, humidity and barometric 3-in-1 sensor
2.	Micro SD card slot
3.	USB Port
4.	Power jack

Table 1: Display console identification

Note: The USB port in the console of weather station is only for firmware update, not for data communication (USB cable not included).

You can use a Micro SD card (max 32G, Fat 32) for the firmware update.(SD card not included).

4.2 Outdoor sensor:

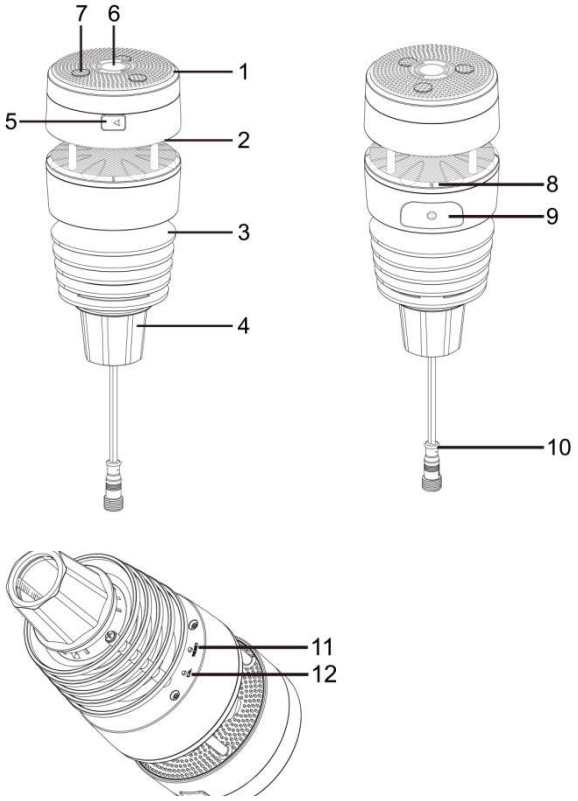


Figure 2: Wireless Sensor Array

1. Solar Panel	7. Hapitac Rainfall sensor
2. Ultrasonic wind sensor	8. NORTH alignment indicator
3. Temperature & humidity sensor	9. Battery compartment
4. Fixed Bolt (Mounting on a pole with 1 inch diameter)	10. Heating power cable connector
5. USB port (Factory use only)	11. Reset button
6. Light & UV sensor, LED indicator	12.Calibration button (factory use only)

Table 1: Sensor assembly detailed items

4.3 Optional sensors

The following optional sensors (purchased separately) can be used with HP2000 console display.

If you have purchase extra sensors, just simple power up, the display console will receives the data automatically. If sensor not reporting in to console, the display console will re-search the data after one hour or restart the console to search the data. Please refer to the sensor manual (provided separately with sensor) for details.

This table shows the maximum number of each type of sensor that can be worked with console display

Sensor	Image	Maximum Number
DP50 Multi-channel temperature and humidity sensor		8
DP100 Soil moisture sensor		8
DP200 PM2.5 air quality sensor		1
DP70 Water leak alarm		4

DP60 Thunder and lightning		1
DP250 Indoor PM2.5/PM10 CO2 air quality sensor temperature/humidty		1
DP10 Leaf wetness sensor * the data won't be displayed on the main screen, it will show its data on the Channel Data page.		8
Sensor	**Image**	**Maximum Number**
DP35 stainless-steel probe thermometer for soil and water DP150 wire probe thermometer for water DP35 and DP150 share the 8 channels		8

To pair the optional sensors with the HP2000 console, please follow the below operations:

1. Place the optional sensor next to the console (keep 5-10ft away from each other).

2. Install batteries on the sensor and wait for 1-2 minutes.

3. Check whether the console will pick up the sensor data automatically and display it on the screen.

4. If not, press the gear icon and go to Setup page - find More and enter its Setup page - find Sensors ID and enter its Setup page.

5. In the Sensors ID Setup page, find the sensor you want to pair - select the ID number box and register it.

6. Once successfully, you may return to the main interface to check the data.

Note：For above optional sensors

1. Console display just show the current data, the history data save in the SD card.

2. WU website doesn’t support. Ecowitt.net can support these sensor data upload.

5 Set up Guide

5.1 Pre Installation Checkout

To complete assembly you will need a Philips screwdriver (size PH0) and a wrench (size M5; included in package).

Before installing the weather station on the place of operation, we recommend placing the weather station at a temporary location with easy access for one week. This will let you check all functions, ensure proper operation, and get familiar with the weather station and its calibration procedures.

Attention:
Do not mix old and new batteries
Do not use rechargeable batteries
If outdoor temperature may go below 32F or 0C for prolonged periods, Lithium based batteries are suggested over alkaline type batteries for the outdoor sensor array

5.2 Outdoor Sensor Array

5.2.1 Install batteries in sensor package

Insert 2XAA batteries in the battery compartment. The LED indicator(on the top of the sensor) will turn on for 3 seconds and normally flash once every 8.8 seconds (the sensor transmission update period).

If sensor has been put outside for some time, and solar panel has charged up the internal accumulator fully or partially, if you install the 2 AA backup batteries, the system might not start up properly. So you can always make a system reset by press the “Reset” button. ?

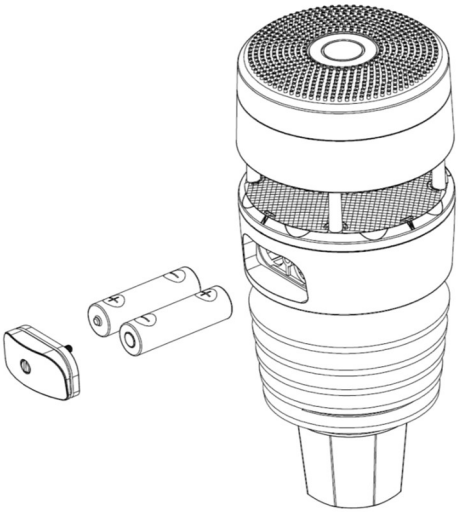


Figure 3: Battery installation diagram

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

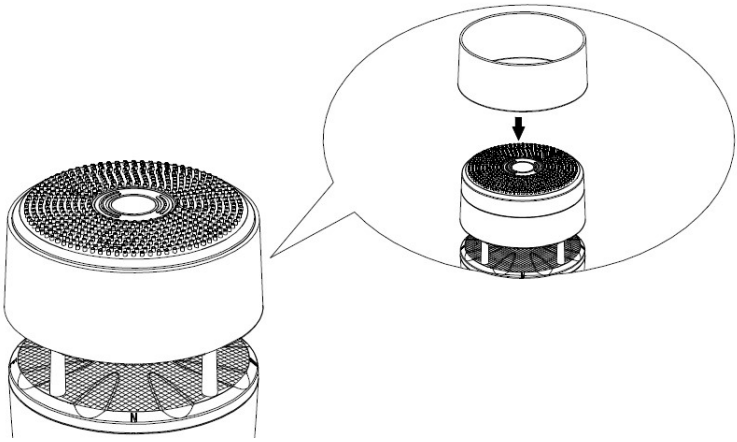
We recommend lithium batteries for cold weather climates, but alkaline batteries are sufficient for most climates. We do not recommend rechargeable batteries. They have lower voltages, do not operate well at wide temperature ranges, and do not last as long, resulting in poorer reception.

5.2.2 Mount ultrasonic anemometer with piezoelectric assembly

Before you mount

Before installing your outdoor sensor in the permanent location, we recommend operating the device for one week in a temporary location with easy access. This will allow you to check out all of the functions, ensure proper operation and familiarize you with the device performance.

1. Put the white O-ring on the out of the upper part of outdoor sensor array for protection against moisture or water penetrated inside



2. Mounting on a pole as Figure 4. Make sure the mounting pole is vertical, or very close to it. Use a level as needed.

   Note: Supports poles 1" OD

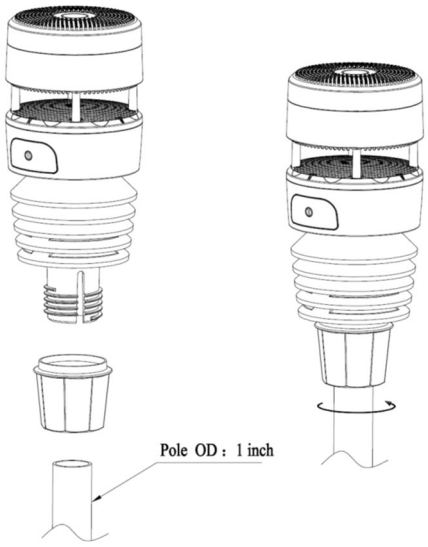


Figure 4: Sensor mounting diagram

3. There is an arrow icon with"N" words (Figure 5) representing the direction of North. The sensor body has to be adjusted so that the "N" indication is facing to real north direction in your location. A compass device is recommended to help adjust direction. Permanent wind direction error will be introduced when the outdoor sensor is not installed in right direction.

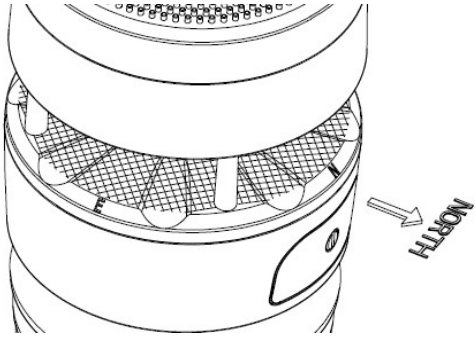


Figure 5 Facing North diagram

Note: In Southern hemisphere, it is not necessary to change the orientation to SOUTH as its solar panel is a rounded type and it is orientation free for its charging capability.

Make sure the mounting tube for the sensor package is installed vertically (use a level at 90-degree offsets around the tube). Adjust the mounting pipe as necessary. Next also make sure the mounting of the anemometer body on the pipe is level. If it is not, wind direction and speed readings may not operate correctly or accurately. Adjust the mounting assembly as necessary.

After power by the adaptor, the built-in thermostat heating plate will automatically turns on below 5°C (40°F) and atutomattically turns off above 10°C (50°F). It is used exclusively to optimize the wind measurement.

Note: The outdoor rated adapter and extended power cable can be purchased separately:

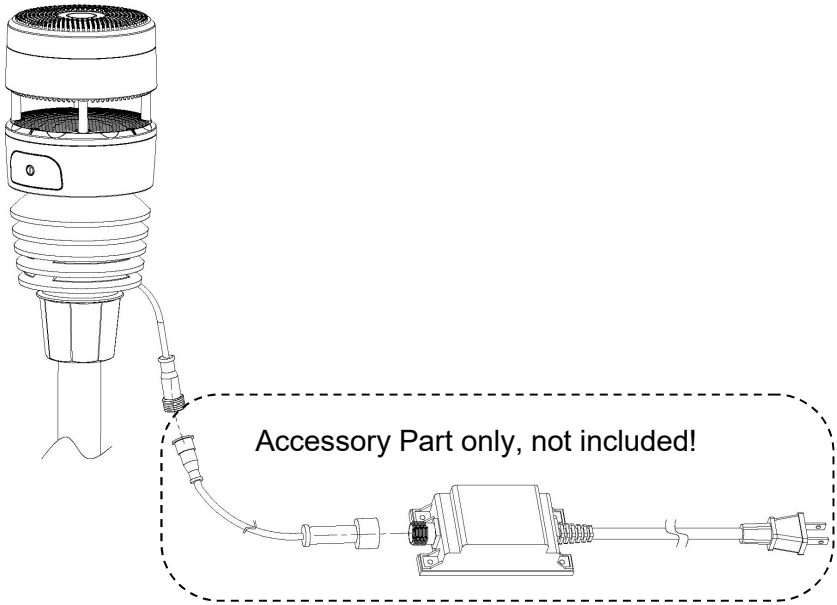


Figure 6: Sensor package mounting diagram

5.2.3 Reset Button and Transmitter LED

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

Using a bent-open paperclip, press and hold the **RESET BUTTON** 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 8.8 seconds.

5.2.4. Calibration

The ultrasonic sensor has been calibration before leaving the factory. We do not recommend that customers do calibration by themselves.

Customers use this feature only when the wind speed does not return to zero when there is no wind

After the product works normally, use a cloth or sponge with good water absorption (prevent the echo of the ultrasonic waves) to completely wrap the air inlet.
With an open ended paperclip, press and hold the CAL button for three seconds, the top LED light will be on. After releasing the CAL button, place the product on the table. After five seconds, the top LED light will flash. At this time it is in the calibration mode. Wait for the LED to flash, the calibration is over, and the product automatically enters the normal working mode.

5.3 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:

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 150 meter 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 50 meter.
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: RF Signal Strength reduction

5.4 Console Display

See Figure 6 to help you identify elements of the console’s display screen.

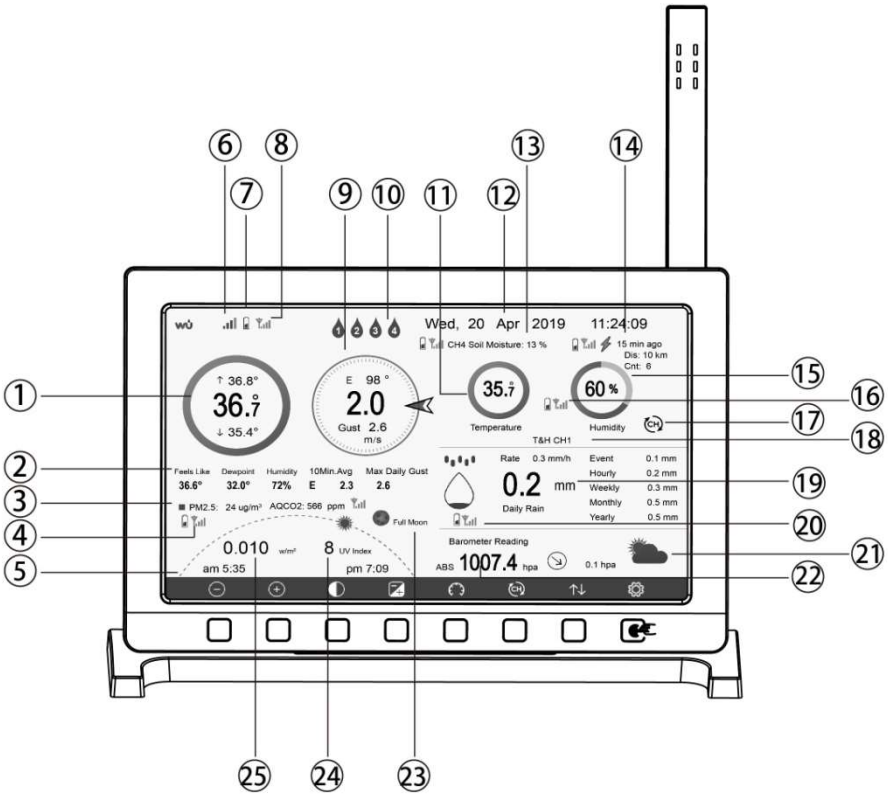


Figure 7: Display Console Screen Layout

No	Description	No	Description
1	Outdoor temperature	14	Last lightning strikes detected time / distance; daily counts (optional sensor)
2	Outdoor Feels Like/Dew point/Humidity/10Min. Average Wind Direction/Max Daily Gust	15	Indoor humidity
3	PM2.5 concentration(optional sensor)	16	RF signal bar for multi-channel temperature and humidity sensor(optional sensor)

No	Description	No	Description
4	RF signal bar for PM2.5 sensor(optional sensor)	17	Multi-channel temperature and humidity sensor cycle display mode icon(optional sensor)
5	Sunrise / Sunset Time	18	Multi-channel temperature and humidity sensor channel number (optional sensor)
6	Wi-Fi signal bar	19	Rain fall Daily/Event/Hourly/Weekly/ Monthly/Yearly
7	Low battery power indicator for each sensor	20	RF signal bar for Rain fall sensor(optional sensor)
8	RF signal bar for outdoor sensor array	21	Weather forecast
9	Wind direction/Wind speed/Gust	22	ABS/REL Barometer
10	Water Leak Alarm (optional Sensor)	23	Moon Phase
11	Indoor temperature	24	UV
12	Date and time	25	Solar Radiation
13	Soil moisture(optional sensor)		

Table: Display console detailed items

5.4.1 Initial Display Console Set Up

Immediately after power up (inserting power adapter), the unit will turn on the display, and the unit will start to look for reception of the indoor and outdoor sensor data. This may take up to 3 minutes.

Dark Background Display

Light Background Display

Note: Sunrise/sunset time display will only work properly when GEO location has been set up correctly. GEO setup can be carried out under setup menu.

5.4.2 Key functions

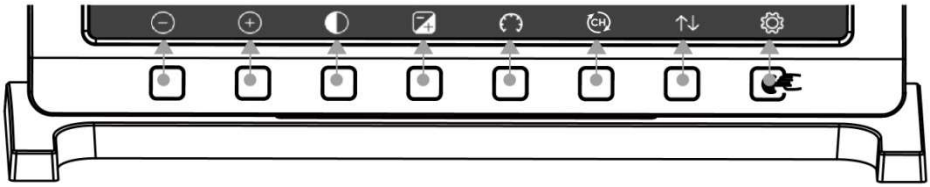


Figure 8: Buttons around the display

There is a set of eight keys on the bottom of the display console. The following table briefly explains the function of these keys.

Icon	Description
	Brightness control key Press this key to decrease the brightness
	Brightness control key Press this key to enhance the brightness
	Backlight on/off key Press this key to on/off the backlight
	Background key Press this key to choose between dark background display and light background display
	Pressure display key Press this key to choose the display between Absolute pressure and Relative pressure.
	Channel key Press this key to Shift the display between indoor temp & humidity, Multiple Channel temp& humidity and scroll automatically mode
	History key Press this key once to view Max/Min record and twice to enter History mode.
	Setting key Press this key to enter Setting Mode

Table: Console buttons

5.4.3 Main interface icons explain

5.4.3.1 Temperature Icon

Temperature Range (degF)	Color Ring	Temperature Range (degF)	Color Ring
< -10		50-60	
-10 to 0		60-70	
0 to 10		70-80	
10-20		80-90	
20-30		90-100	
30-40		100-110	
40-50		> 110	

5.4.3.2 Humidity Icon

Humidity Range (%)	Color Ring	Humidity Range (%)	Color Ring
0%, No signal or dashes		50 to 60	
1 to 10		60 to 70	
10 to 20		70 to 80	
20 to 30		80 to 90	
30 to 40		90 to 99	
40 to 50		100%	

5.4.3.3 Current wind direction indication  , 10-minute average wind direction indication  .

5.4.3.4 Hourly Rainfall Icon

Hourly Rain (in)	Icon	Hourly Rain (in)	Icon
0.0		0.6 to 0.8	
0 to 0.2		0.8 to 1	
0.2 to 0.4		1 to 1.2	
0.4 to 0.6		1.2 to 1.4	

5.5 Multiple Channel Selection and Scroll Mode

Multi-channel sensors are optional sensors, not included in the package. If you have multiple wireless sensors, while in normal mode, press the  key to toggle display in sequence of indoor, ch1, ch2….ch8, scroll display. Please note if only CH2 is received, it will skip CH1, and toggle only between indoor and already learned sensors.

While in Scroll display mode, the scroll icon  will be displayed next to the indoor humidity, and will scroll every 5 seconds.

Note: For multi channel sensors, only the current data of each sensor can be viewed on the console, and no history data will be saved or uploaded to any weather servers.

5.5 History Mode

5.5.1 View and Reset MAX/MIN

While in normal display, press the  key once to view and reset minimum and maximums.

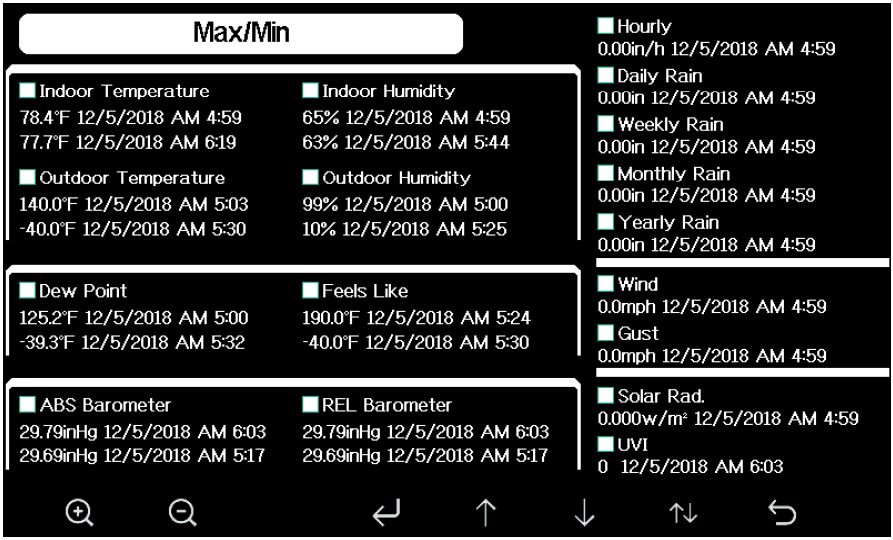


Figure 9: Max/Min Screen

Icon	Description
	**Selection key** Press this key to select the weather MAX/MIN record which need to clear
	**Selection key** Press this key to select the weather MAX/MIN record which need to clear
	**Enter key** While the desired weather MAX/MIN record selected , press this key to popup Message Box ”Clear the Max/Min record?”. Press  key or  key to select YES or NO. Press the  key or  key to confirm the selection.
	**Up arrow key** Press this key to change the activated option field
	**Down arrow key** Press this key to change the activated option field

	History key Press this key to select History data display.
	Return key Press this key to return to normal display mode

5.5.2 History Record Mode

While in normal display, press the key twice to enter History Record Mode.

No	Time	Indoor Temperature (°F)	Indoor Humidity (%)	Outdoor Temperature (°F)	Outdoor Humidity (%)	Dew Point (°F)	Feels Like (°F)	Wind (mph)
2689	12/5/2018 AM 6:40	77.7	65	68.9	47	47.8	68.9	2.5
2690	12/5/2018 AM 6:45	77.7	65	68.9	47	47.8	68.9	2.5
2691	12/5/2018 AM 6:50	77.7	65	68.9	47	47.8	68.9	2.2
2692	12/5/2018 AM 2:40	77.9	65	68.9	47	47.8	68.9	2.5
2693	12/5/2018 AM 2:45	77.9	65	68.9	47	47.8	68.9	2.2
2694	12/5/2018 AM 2:50	77.9	65	68.9	47	47.8	68.9	2.2
2695	12/5/2018 AM 2:55	77.9	65	68.9	46	47.3	68.9	2.2
2696	12/5/2018 AM 3:00	77.9	65	68.9	46	47.3	68.9	2.2
2697	12/5/2018 AM 3:05	77.9	65	68.9	46	47.3	68.9	2.2
2698	12/5/2018 AM 3:10	77.9	65	68.9	46	47.3	68.9	2.2
2699	12/5/2018 AM 3:15	77.9	65	68.9	46	47.3	68.9	2.7
2700	12/5/2018 AM 3:20	77.9	64	68.9	46	47.3	68.9	2.5
2701	12/5/2018 AM 3:25	77.9	65	68.9	46	47.3	68.9	2.2
2702	12/5/2018 AM 3:30	78.1	65	68.9	46	47.3	68.9	2.2
2703	12/5/2018 AM 3:35	78.6	65	68.9	46	47.3	68.9	2.2
2704	12/5/2018 AM 3:40	78.6	65	68.9	46	47.3	68.9	2.2

Figure 10: History record Screen

Icon	Description
	File Select key Press this key to clear all history record
	Page Select key Press this key to enter particular page of the history data. Each page contains 16sets data.
	Scroll left key Press this key to view the left of the scrollable area.
	Scroll right key Press this key to view the right of the scrollable area.
	Page up key Press this key to scroll up the page you are viewing

	Page down key Press this key to scroll down the page you are viewing
	History key Press this key to select the Max/Min record or History.
	Return key Press this key to return to previous mode

5.5.2.1 Clear the history record

While in History Record Mode, press key to popup the Message Box: "Clear the history record?" Press "Yes" to clear all history records saved on console. Press or key to return to History record Mode.

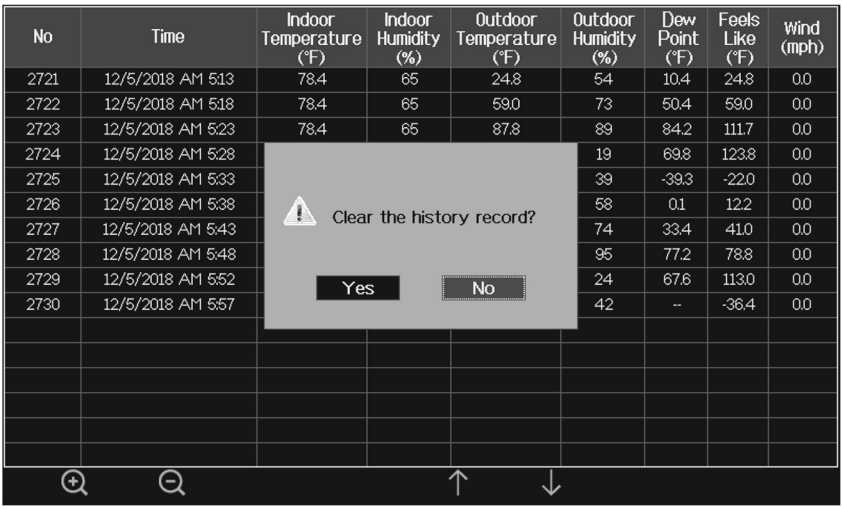


Figure 11: Clear History Record Screen

5.5.2.2 View a specific page of history

While in History Record Mode, press the key to enter the page selection mode:

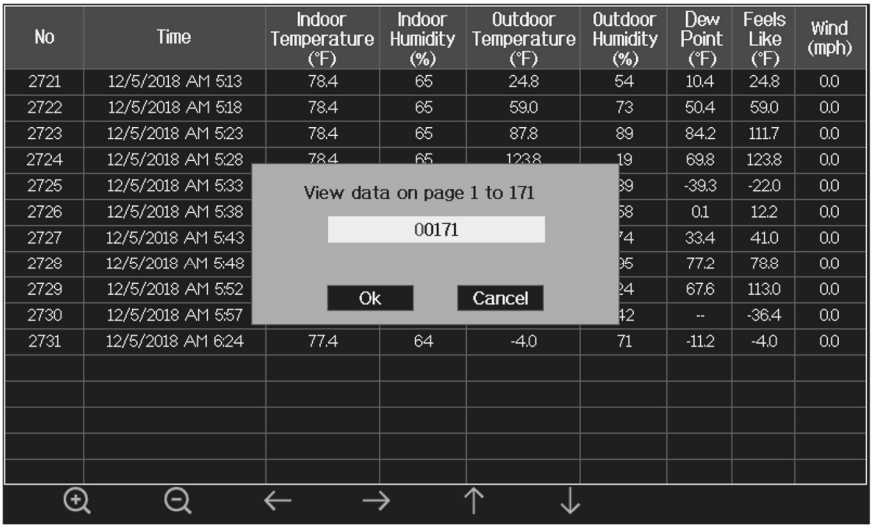


Figure 12: view a specific page of history Screen

Press ← or → to select a digit in a number, press ⊕ or ⊖ key to change the number. Press ↑ or ↓ to change the activated option field, toggle OK or Cancel then press ⊕ or ⊖ key to confirm.

5.5.3 View Graph

While in History Record Mode, press the ↑↓ key three times to enter Graph Mode.

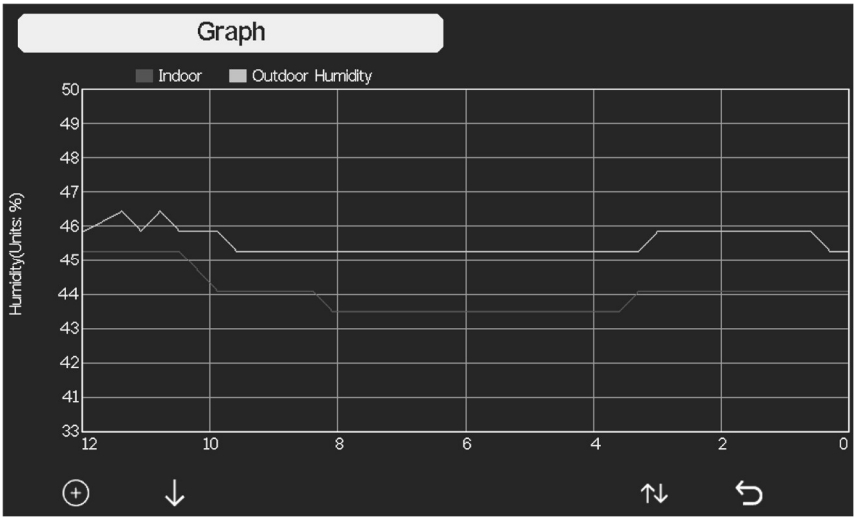


Figure 13: Graph Screen

Press  to shift the data display of 12/24/48/72H. Press  to view the graph of the following data:

- Indoor outdoor temperature
- Dew Point and Feels like
- Indoor outdoor humidity
- Wind speed and Gust
- Wind Direction
- UVI
- Solar radiation
- Rainfall hourly and daily
- Barometer (REL & ABS)

5.5.4 View Channel Data

While in normal display, press the  key four times to enter Channel Data Mode.

If you purchase the optional sensor, soil moisture sensor or PM2.5 sensor or

multi-channel temperature and humidity sensor, their data can be showed on Channel Data screen.

Press  or  key to select Name setting field, the name on focus turns green, press the  or  key to pop up the keyboard to enter the sensor name. Press     to scroll to the character and press  to select the character. Press  to return to the Channel Data page.

Press  key to page down.

Figure 14: Channel Data Screen

5.6 Setting Mode

While in normal display, press the  key to enter Setting Mode. You

can select the below sub-mode by pressing the key

Figure 15: Setup Menu Screen

Icon	Description
	Select key Press this key to select the unit or scrolls the value
	Select key Press this key to select the unit or scrolls the value.
	Left key Press this key to select the set value.
	Right key Press this key to select the set value.
	Up arrow key Press this key to change the activated option field
	Down arrow key Press this key to change the activated option field
	Set key Press this key to select the Setting sub-Mode

	Return key Press this key to return to previous mode

5.6.1 Date and Time setting

While in Menu Setting Mode, press key to select Date and Time Setup field, press or key to enter Date and Time Setup mode:

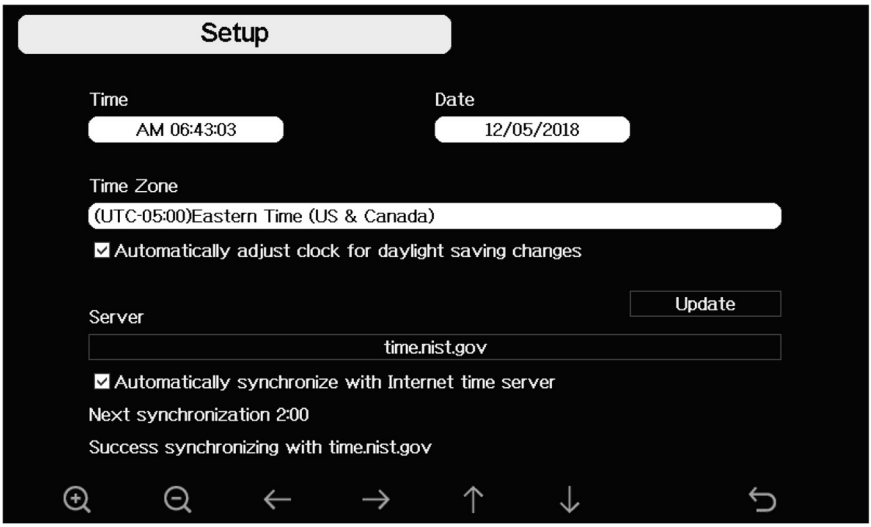


Figure 16: Time and date Setup Screen

1) Time setting (hour/minute/second)

Press key to select time setting field, and the hour digit will turn red, press the or key to change the hour setting. Press to set the minute, the minute digit will turn red, press the or key to change the minute setting. Press to set the second, and the second digit will turn red, press the or key to change the second setting

2) Date setting

Press  key to select Date setting field, the day digit on focus turns red, press the  or  key to change the day setting. Press  to set the month, then month digit focused will turn red, press the  or  key to change the month setting. Press  to set the year, the year digit on focus will turn red, press the  or  key to change the year setting

3) Time zone setting

Press  key to select Time zone setting field, press the  or  key to change the time zone setting. Press  key to select Update field, press the  or  key to update the time immediately.

4) Automatically synchronize with internet time server

The time server is time.nist.gov. Press the  or  key to tick" Automatically synchronize with internet time server" and press" update" to synchronize with time server immediately. Console time will be updated at 2:01am automatically when internet access is possible.

5.6.2 Time Format setting

Press  to change the time format between hour: minute: second (h:mm:ss), hour: minute: second AM (h:mm:ss AM) and AM hour: minute: second (AM h:mm:ss).

5.6.3 Date Format setting

Press  to change the time format between DD-MM–YYYY, YYYY-MM- DD and MM-DD-YYYY

5.6.4 Temperature unit setting

Press  to change the temperature units of measure between °F and °C.

5.6.5 Barometric unit

Press  to change the temperature units of measure between inHg, mmHg and hpa

5.6.6 Wind speed unit

Press  to change the wind speed units of measure between mph, bft (Beaufort scale), ft/s, m/s, km/h and knot.

5.6.7 Rainfall unit

Press  to change the rainfall units of measure between in and mm

5.6.8 Solar Rad. Unit

Press  to change the solar radiation units of measure between W/m^2, lux and fc.

5.6.9 Multi Channel Sensor

In Multi channel sensor Setup Screen, you can rename the Multi-channel temperature and humidity sensor or register the Multi-channel temperature and humidity sensor again while the sensor lost connection to console display.

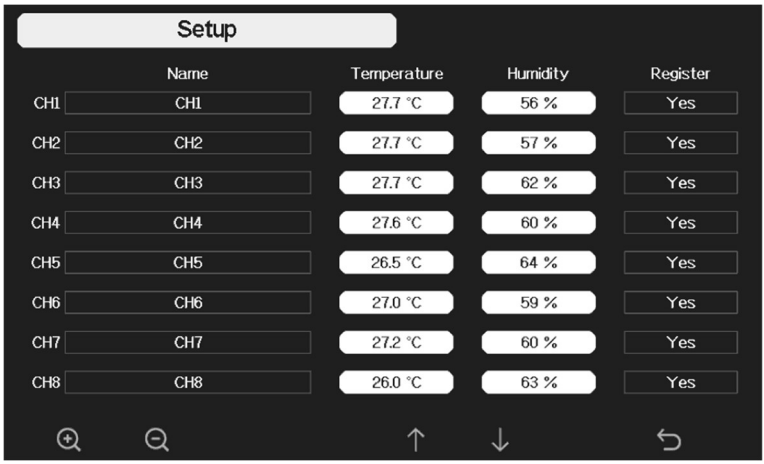


Figure 17: Multi channel sensor Setup Screen

Press ↓ or ↑ key to select Name setting field, the name on focus turns green, press the ⊕ or ⊖ key to pop up the keyboard to enter the sensor name. Press ↑ ↓ ← → to scroll to the character and press ↵ to select the character. Press ↩ to return to the setup page.

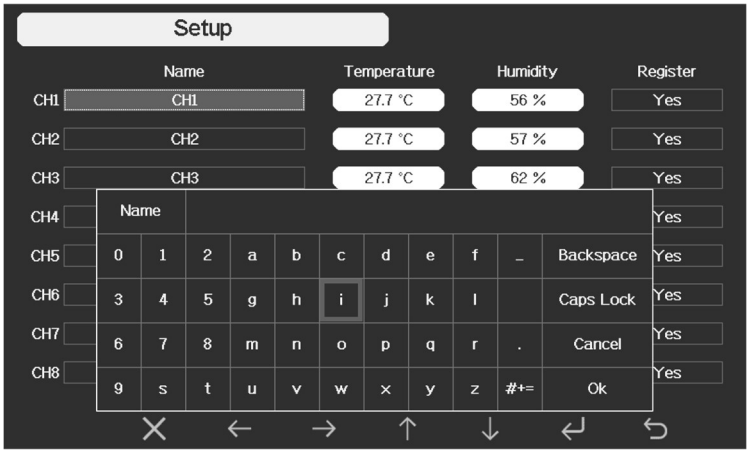


Figure 18: rename the sensor Screen

Press ↓ or ↑ key to select Register setting field, press the ⊕ or ⊖ key to register the selected sensor

5.6.10 Backlight setting

While in Menu Setting Mode, press ↓ key to select Backlight Setup field, press ⊕ or ⊖ key to enter backlight Setup mode:

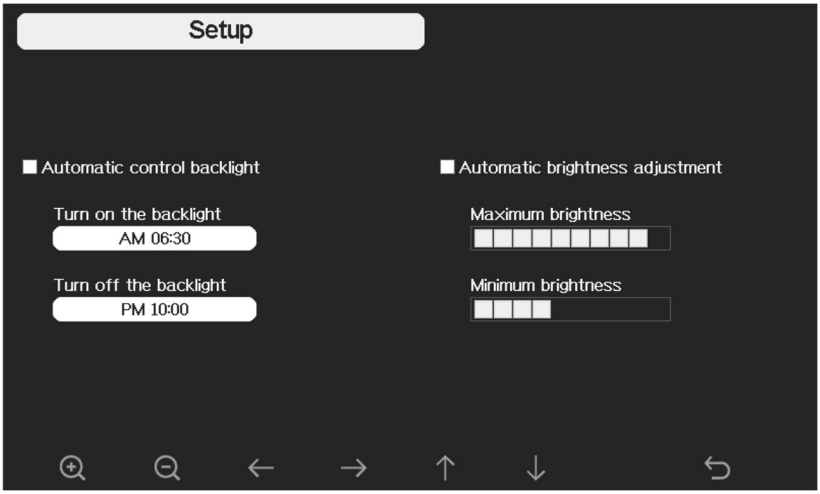


Figure 19: Backlight Setting Screen

Automatic control backlight: select this option, the backlight will auto turn on and off according the set time
Turn on the backlight: set the time of turning on backlight
Turn off the backlight: set the time of turning off backlight
Automatic brightness adjustment: select this option, the brightness will change according to the light intensity measured from outdoor sensor
Maximum brightness: set the maximum brightness while it is the highest light intensity

Minimum brightness: set the minimum brightness while it is the weakest light intensity

Icon	Description
	**Select key** Press this key to select the unit or scrolls the value
	**Select key** Press this key to select the unit or scrolls the value.
	**Left key** Press this key to select the set value.
	**Right key** Press this key to select the set value.
	**Up arrow key** Press this key to change the activated option field
	**Down arrow key** Press this key to change the activated option field
	**Return key** Press this key to return to previous mode

If the auto backlight turn-on time has been set, you can press  key to turn off the backlight within the turn on time. Backlight will turn on again automatically at next turn on time.

5.6.11 Longitude: Latitude setting

While in Menu Setting Mode, press  key to select Longitude: Latitude Setup field, press  or  key to enter Longitude Latitude Setup mode:

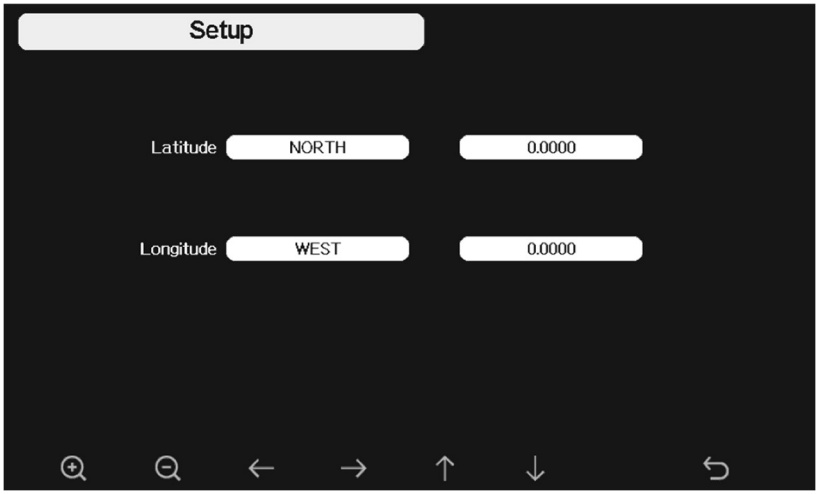


Figure 20: Longitude and Latitude Setting Screen

The sunrise/sunset times will be calculating automatically base on the Longitude and Latitude. Your location GEO info can be found on mobile compass page. Two digits after decimal should be enough for this feature to be working correctly.

5.6.12 Reset Weekly Rain

Press  to change the Reset Weekly Rain At Monday or Sunday, Default at Sunday

5.6.13 Rainfall season (default: January)

Press  to change the beginning of the rainfall yearly season month. The default is January. Rainfall season influence the annual rainfall maximum, minimum and total value. When one month was selected, the annual rainfall and annual max/min rainfall were zero clearing at 0:00 of the first day of the selected month.

5.6.14 Storing Interval (1-240minutes Selectable)

5.6.15 Weather Server

Your console is capable of sending your sensor data to select internet-based weather services. The supported services are shown in the table below:

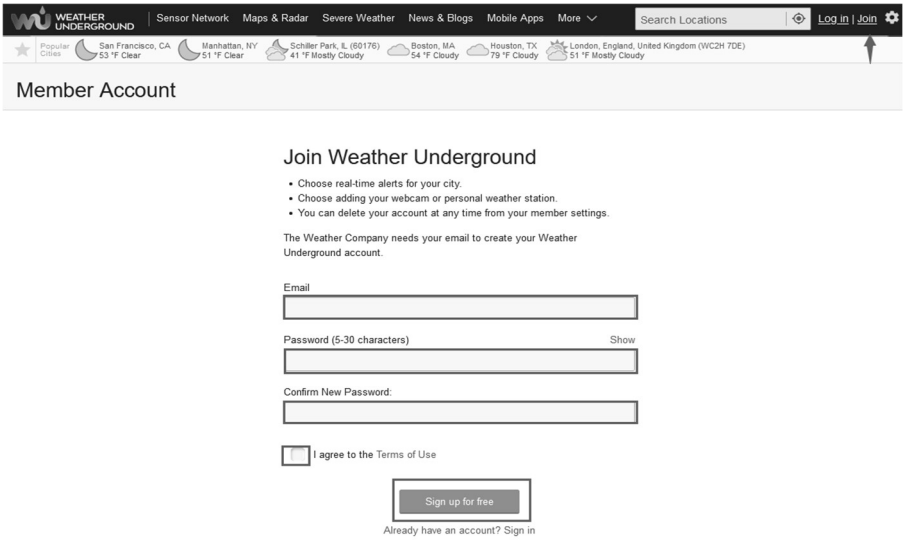
Service	Website	Description
Ecowitt Weather	https://www.ecowitt.net	Ecowitt is a new weather server that can host a bunch of sensors that other services don't support.
Weather Underground	https://www.wunderground.com	Weather Underground is a free weather hosting service that allows you to send and view 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.
WOW	http://wow.metoffice.gov.uk/	WOW is a UK based weather observation website.
Weather Cloud	https://weathercloud.net	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

Table: Supported weather services

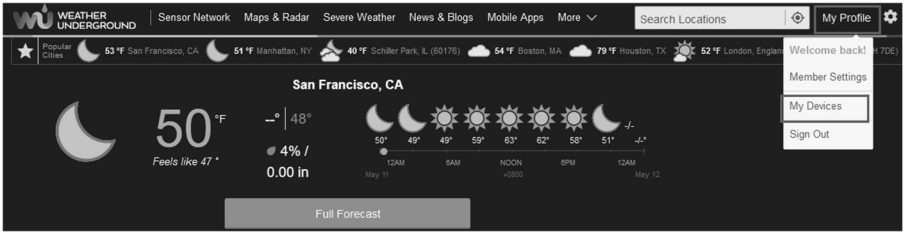
5.6.15 .1 Wunderground server setup

Perform the following steps to get the Station ID and Password on wunderground.com:

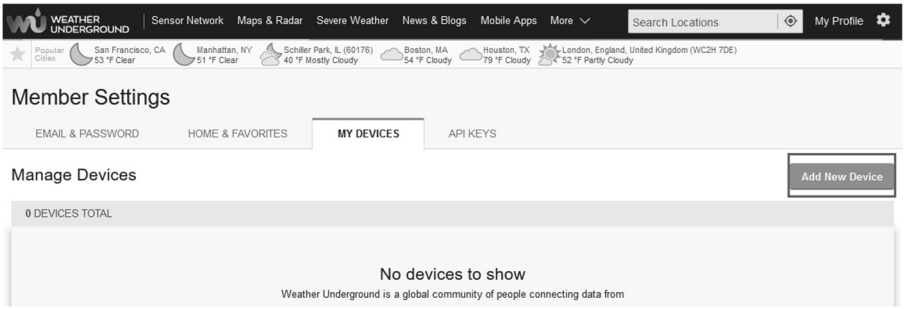
1. Visit Wunderground.com and select the **Join** link at the top of the page and sign up.



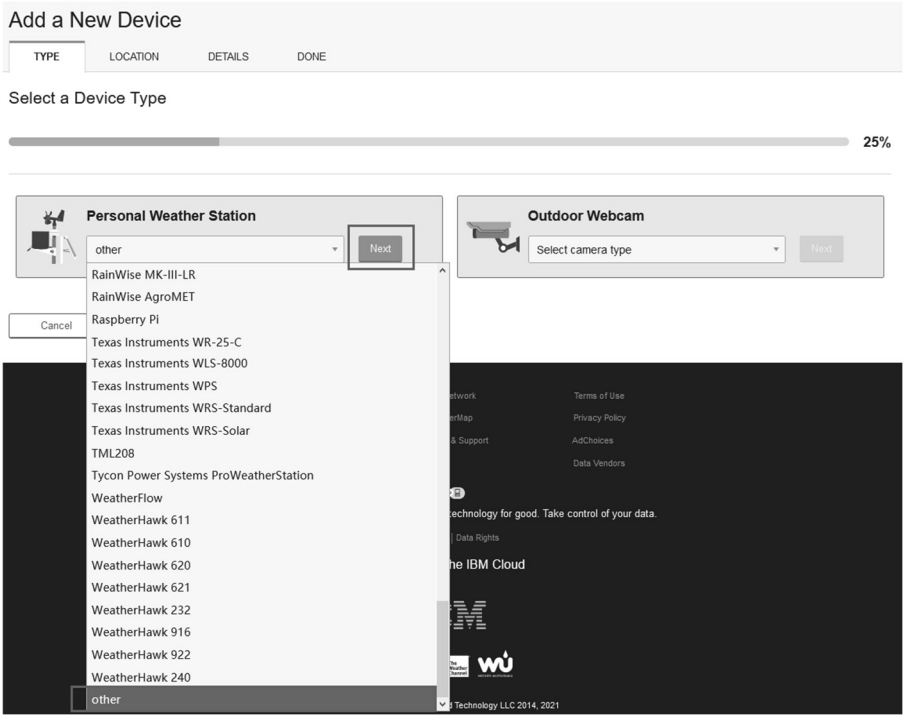
2. Click **My Profile and select My Devices** to register your station



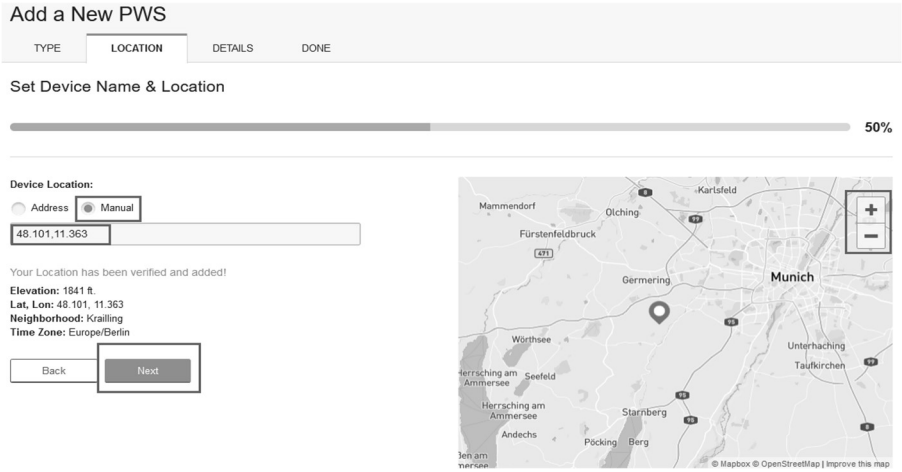
3. Select **Add New Device**.



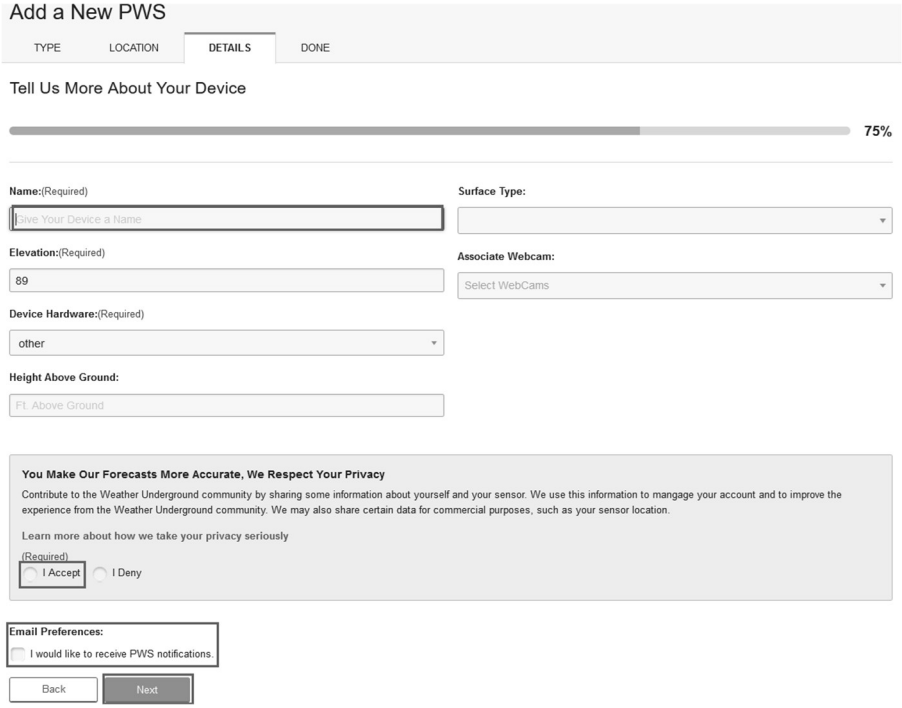
4. Find Personal Weather Station. Select ‘other’ and click ‘Next’.



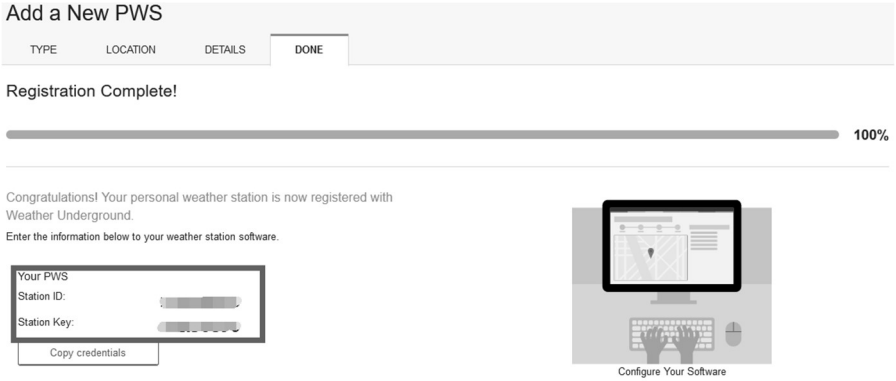
5. Select ‘Address’ or ‘Manual’ option, and find your local position. Press ‘Next’.



6. This time you will be asked details about your weather station. Go ahead and fill out the form.



7. After completing the weather station, you will see station ID and key/password.



8. Take note of the station ID and key/password and enter it in the Weather Server:

9. Figure 21: WU Server setup screen

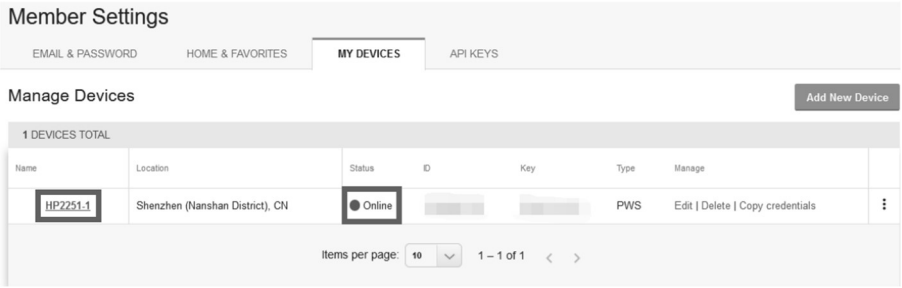
10.	11.	12.	13.	14.
15. scroll value up	16. scroll value down	17. Scroll field up	18. Scroll field down	19. return to Setup

1) **Set Station ID**: Press ↓ to highlight the Station ID. Enter your station ID. Press 🔍+ to display the keyboard. Press ↑ ↓ ← → to scroll to the character and press ↵ to select the character. Press the "OK" button to confirm. Press ↩ to return to the setup page.

2) **Set Station Key**: Press ↓ to highlight the station key. Enter your password obtained from according weather server. Press 🔍+ to display the keyboard. Press ↑ ↓ ← → to scroll to the

character and press  to select the character. Press the “OK” button to confirm..Press  to return to the setup page.

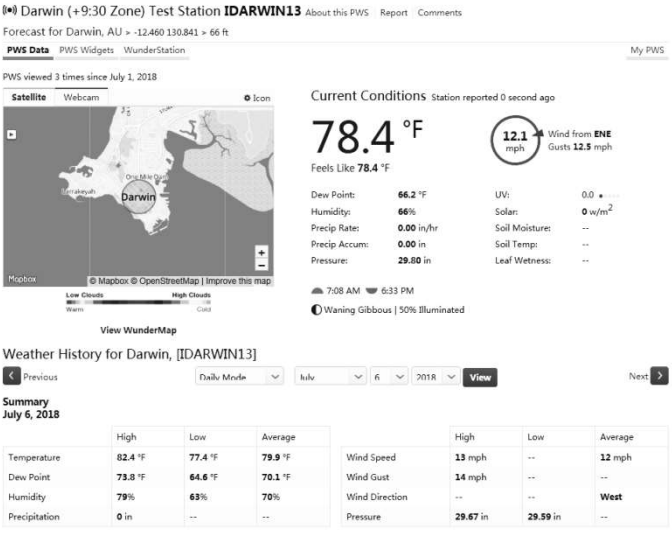
9. Refresh the page, you may have to wait about a few minutes until the status becomes ‘Online’. Then you can click device name to view data.



5.6.15 .2 Viewing data on wunderground.com

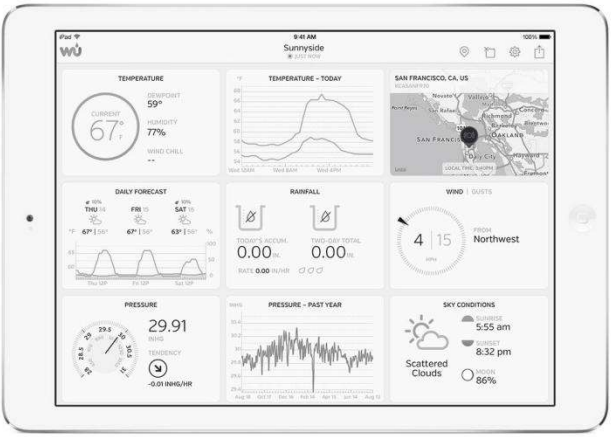
The most basic way to observe your weather station’s data is by using the wunderground.com web site. You will use a URL like this one, where your station ID replaces the text “STATIONID”:
http://www.wunderground.com/personal-weather-station/dashboard?ID=STATIONID

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



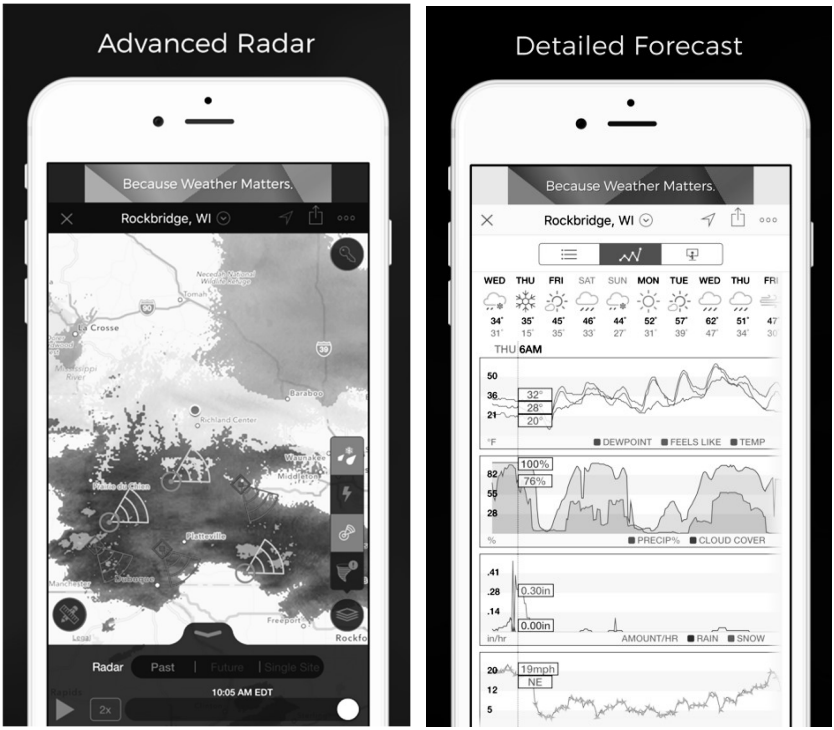
There are also some very useful mobile apps. The URLs provided here go to the Web version of the application pages. You can also find them directly from the iOS or Google Play stores:

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

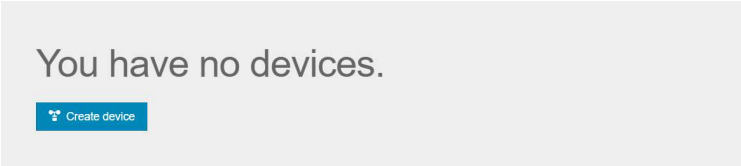
5.6.15.3 Weathercloud server setup

To register with Weathercloud follow these steps:

1) Visit weathercloud.net and enter a Username, Email and Password to sign up.

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

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.
5) Enter these values in the **Weather Server**:

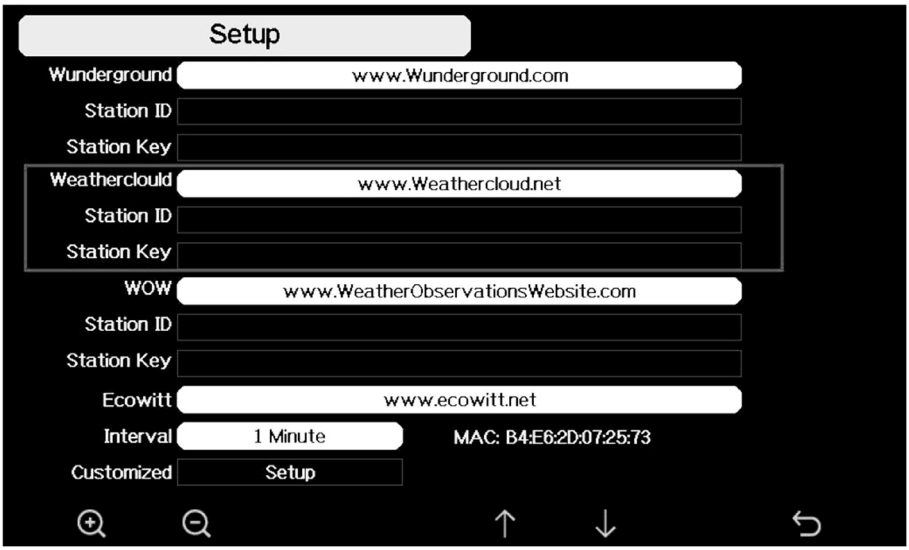


Figure 31: Weathercloud Server setup screen

scroll value up	scroll value down	Scroll field up	Scroll field down	return to Setup

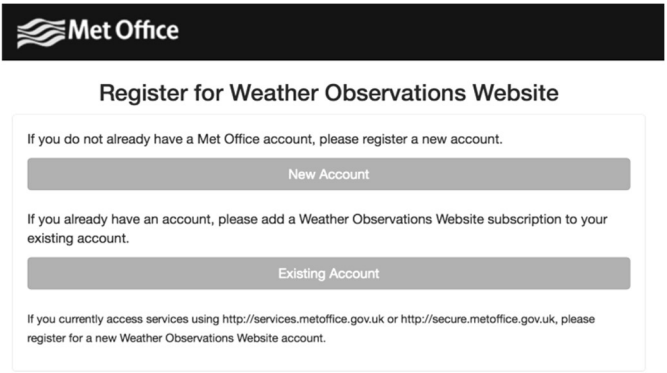
5.6.15.4 Weather Observations Website (WOW) server setup

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

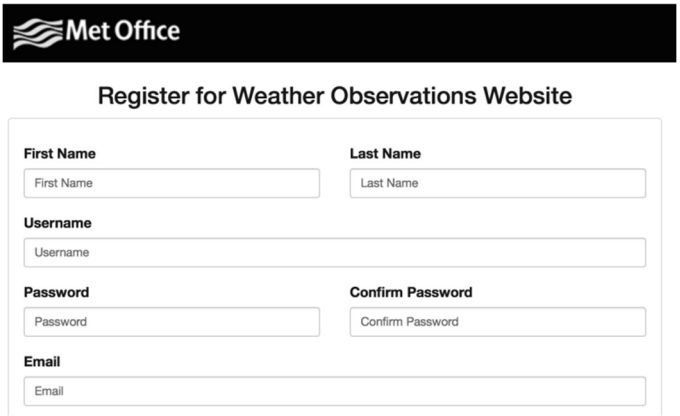
1) Sign Up with WOW

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"

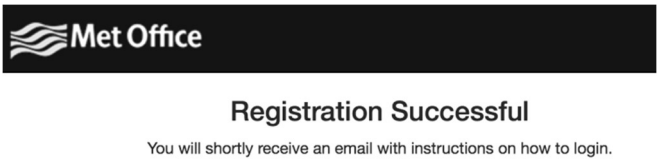
You will be presented with the screen below where you will choose to either create a new account or use an already existing account. Click the desired option.



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



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:



2) Confirm your email with WOW

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

3) Login to WOW

Follow instructions on the screen and login to the site.

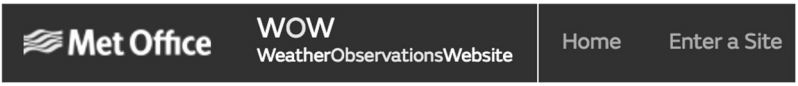
4) Create/Set up a new WOW site

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:

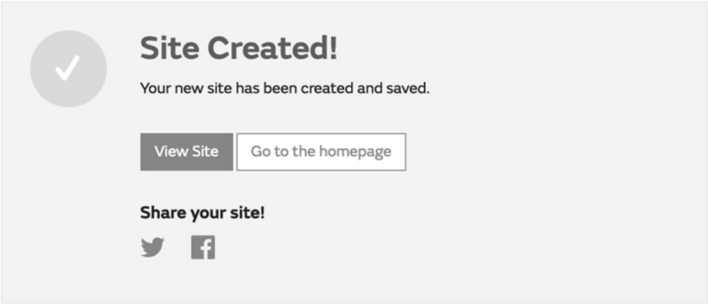
Site ID: This is an arbitrary number that is used to distinguish your site from another. This number appears (in brackets) next to or underneath the name of your site on the site information page, for example: 6a571450-df53-e611-9401-0003ff5987fd

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:

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

Figure 22: WOW Server setup screen

				
scroll value up	scroll value down	Scroll field up	Scroll field down	return to Setup

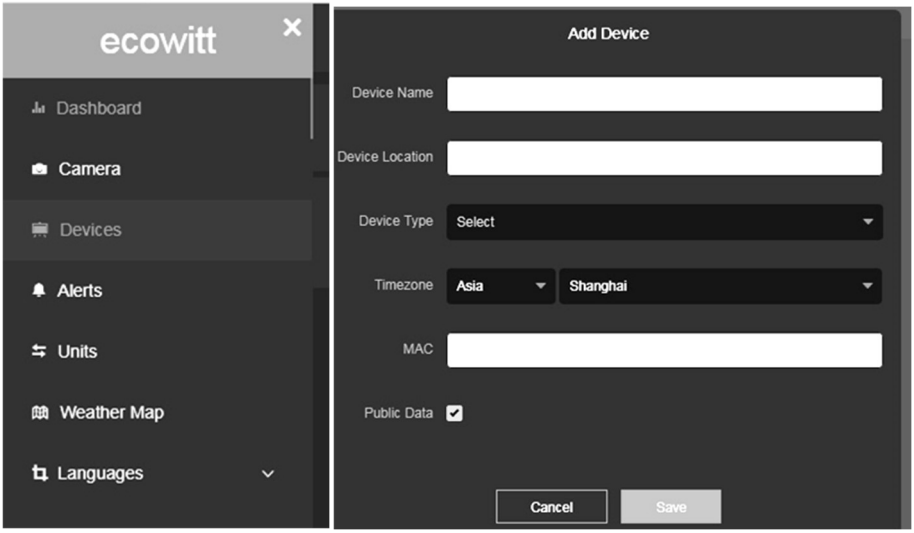
5.6.15.5 Ecowitt.net server setup

Figure 23: Ecowitt Server setup screen

scroll value up	scroll value down	Scroll field up	Scroll field down	return to Setup

To register with Ecowitt follow these steps:

1) On the Weather Server page, set the reporting interval time(default: 1 minute).
2) Visit the website: https://www.ecowitt.net on your computer and finish the registration on the page.
   - Press the upper left menu button and select Devices.
   - Press Add Device and input all the information needed (The MAC address can be found on the Weather Server page).
   - Press Save.
   - Press Dashboard on the menu. Your sensor data would be available on the dashboard within several minutes.



Note: When select device address on map, please wait till the map display before select your address.

Note: Please put in the correct time zone to get the correct time. Because the time will be updated to internet time automatically while WIFI connection.

You may add a shortcut to the ecowitt.net website on the home page of your phone so that you can visit it just like opening an app.

5.6.15.6 Viewing data on ecowitt.net

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

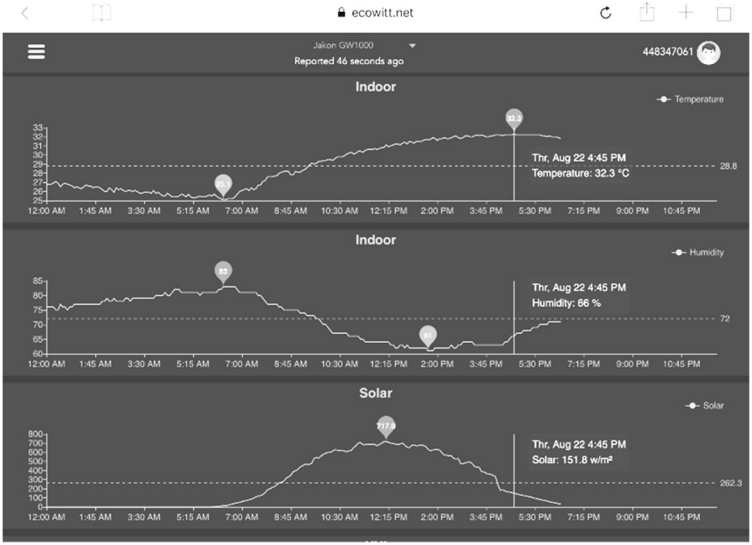
https://www.ecowitt.net/home/index?id=STATIONID

Note: If you want to share your station data with other users, you'll need to set your data to be public. Other users need to log in the ecowitt.net first to view your data.

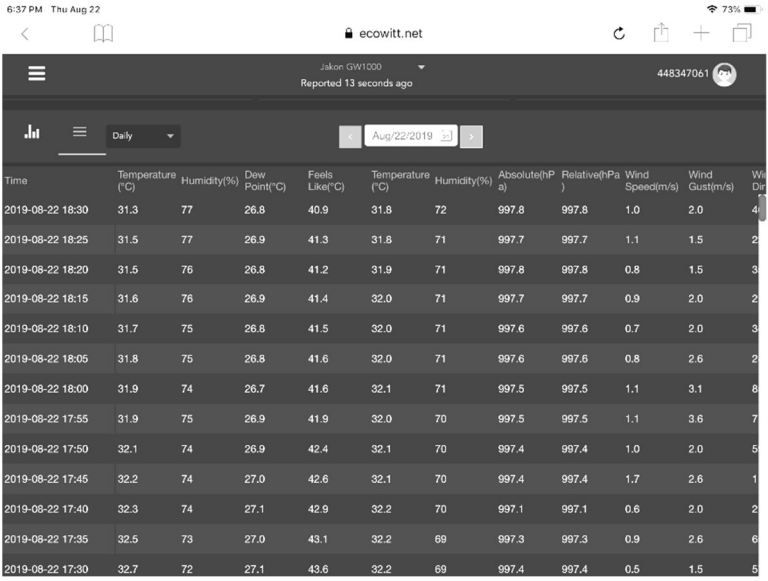
It will show a page such as this, where you can look at today's data and historical data as well.

Dashboard

Graph display

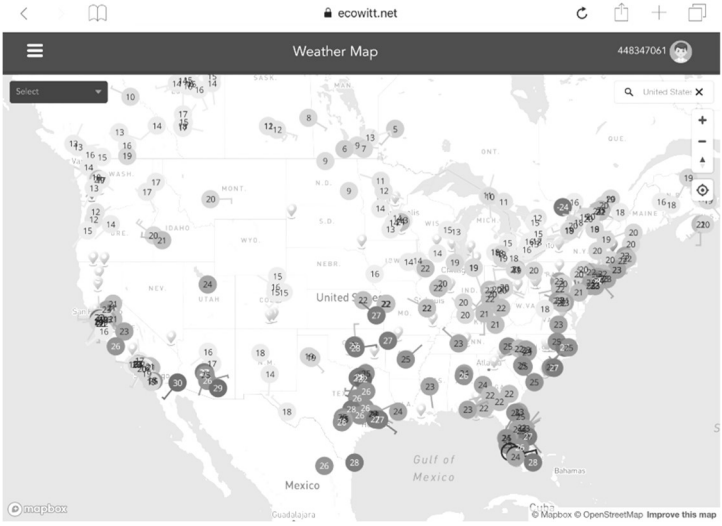


List display

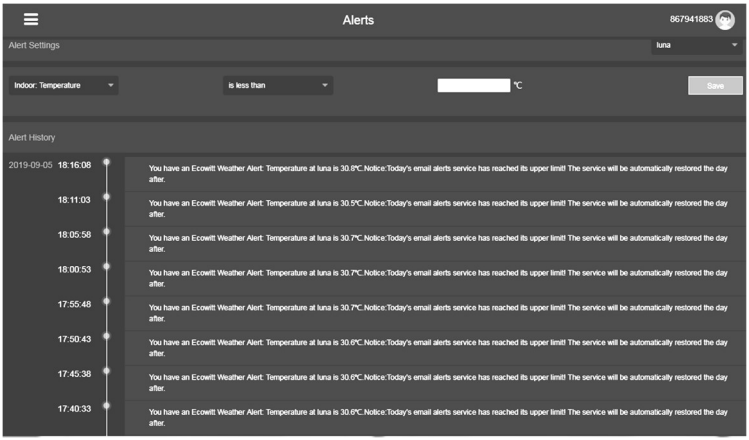


Time	Temperature (°C)	Humidity(%)	Dew Point(°C)	Feels Like(°C)	Temperature (°C)	Humidity(%)	Absolute(hPa)	Relative(hPa)	Wind Speed(m/s)	Wind Gust(m/s)	Wi Dir
2019-08-22 18:30	31.3	77	26.8	40.9	31.8	72	997.8	997.8	1.0	2.0	4
2019-08-22 18:25	31.5	77	26.9	41.3	31.8	71	997.7	997.7	1.1	1.5	2
2019-08-22 18:20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

Weather Map



Email Alerts



Ecowitt.net is a responsive design and mobile friendly. Simply open your mobile devices web browser, browse to ecowitt.net, and bookmark your dashboard for quick access.

5.6.15.7 Customized server setup

For highly experienced users, it offers the option to send data to the user's own server. Press the "setup" button to enter Customized setup screen,

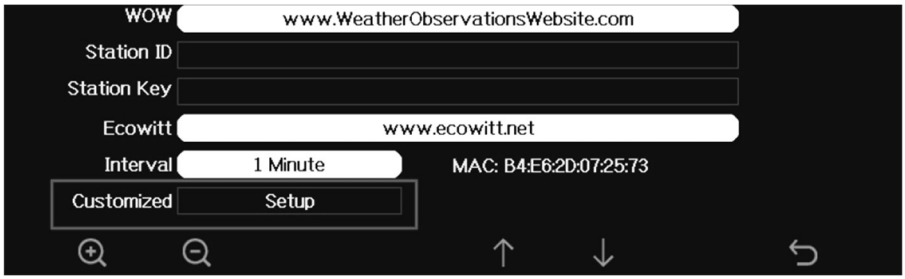
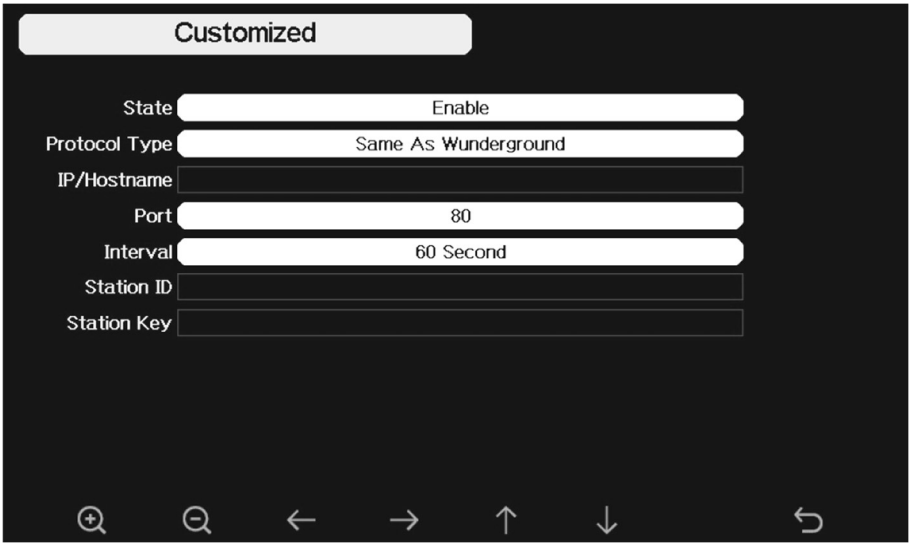
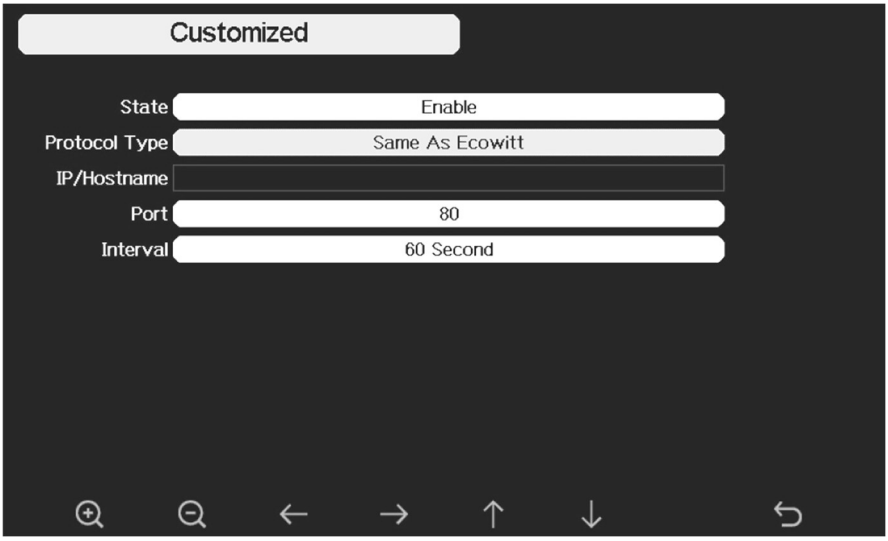


Figure 24: Server setup screen

Select Enable button and select the protocol type. The website should has the same protocol with Wunderground or Ecowitt. Input all the information needed.


Customized
State
Enable
Protocol Type
Same As Wunderground
IP/Hostname
Port
80
Interval
60 Second
Station ID
Station Key


Customized
State
Enable
Protocol Type
Same As Ecowitt
IP/Hostname
Port
80
Interval
60 Second

5.6.16 Wi-Fi scan

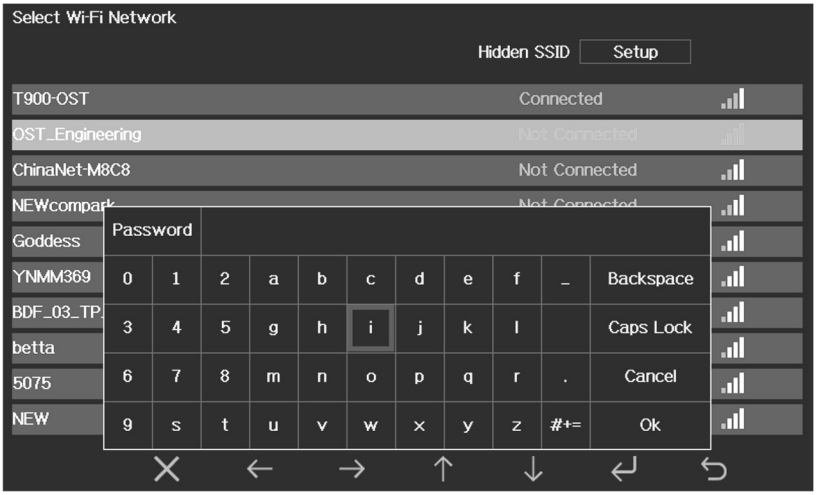


Figure 25: Select Wi-Fi Network Screen

Press  or  key to select the Wi-Fi network. Press  key to confirm and enter the password. Press  key to return to normal display mode. It is possible that your network is not listed when Wi-Fi Scan is performed. Press  button and restart Wi-Fi Scan, this will usually solve the problem.

Only after connect to WLAN you can upload the data to weather website. If the Wi-Fi network connects successfully, the icon  will show on the left top of the console display. If the data upload to Wunderground.com successfully, the icon  will show on the left top of the console display. If the Wi-Fi network you would like to connect is with a hidden SSID, please follow below steps to connect:

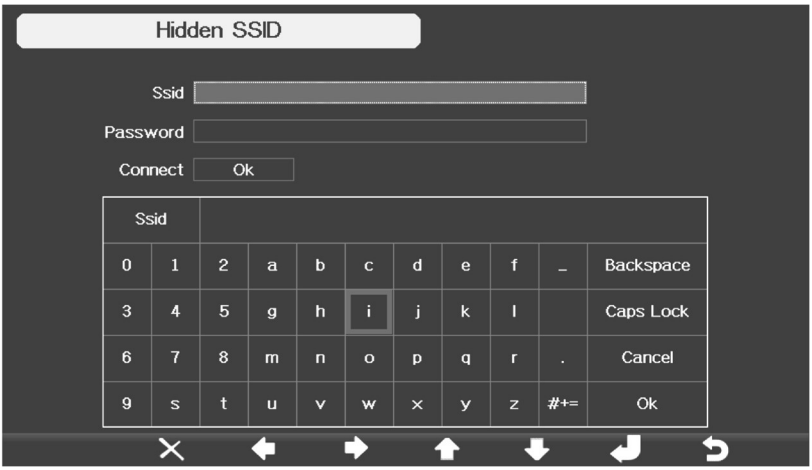
1) Press ↑ ↓ to select Hidden SSID setup, and press ↵ key directly to enter.

2).Press ↓ to highlight the SSID. Press ↵ to display the keyboard and enter your SSID. Press ↑ ↓ ← → to scroll to the character and press ↵ to enter the character. Press ↩ to return to the setup page.

3). Press ↓ to highlight the Password. Press ↵ to display the keyboard and start to enter your password.. Press ↑ ↓ ← → to scroll to the character and press ↵ to enter the character. Press ↩ to return to the setup page.

4).Press ↓ to highlight the “OK” button beside “Connect ” to start connecting.

After connected successfully, the status will display” Connected”.



5.6.17 Reset Daily Rain

While in Menu Setting Mode, press key to select Reset Daily Rain Setup field, press or key to Reset Daily Rain begin it from 00:00 to 23:00 ,Default in 00:00

5.6.18 More

This screen is for optional sensors calibration and sensors ID setup. Press or key to enter More mode.

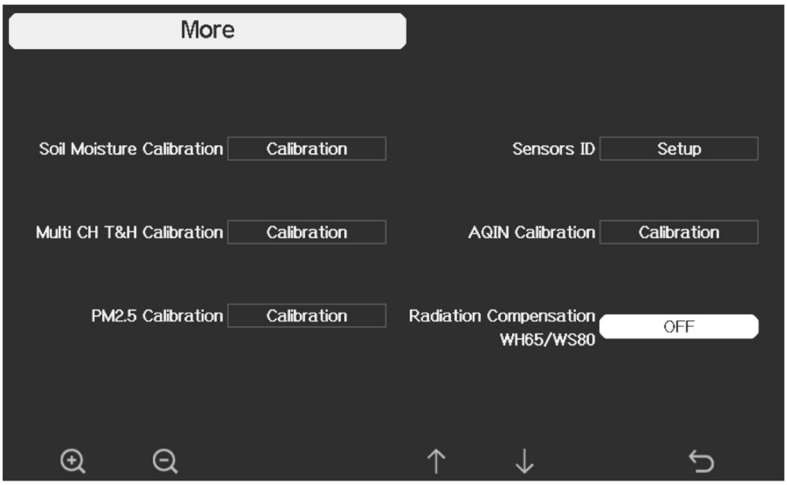


Figure 26: optional sensors calibration and sensor ID setup Screen

Press ↓ or ↑ key to select setting field, press the ⊕ or ⊖ key to enter option sensors calibration mode or Sensor ID setup mode.

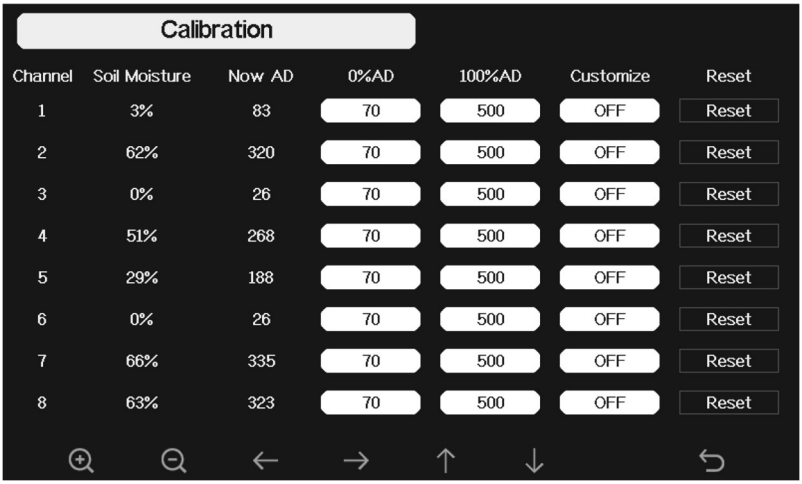


Figure 27: Soil Moisture Calibration Screen

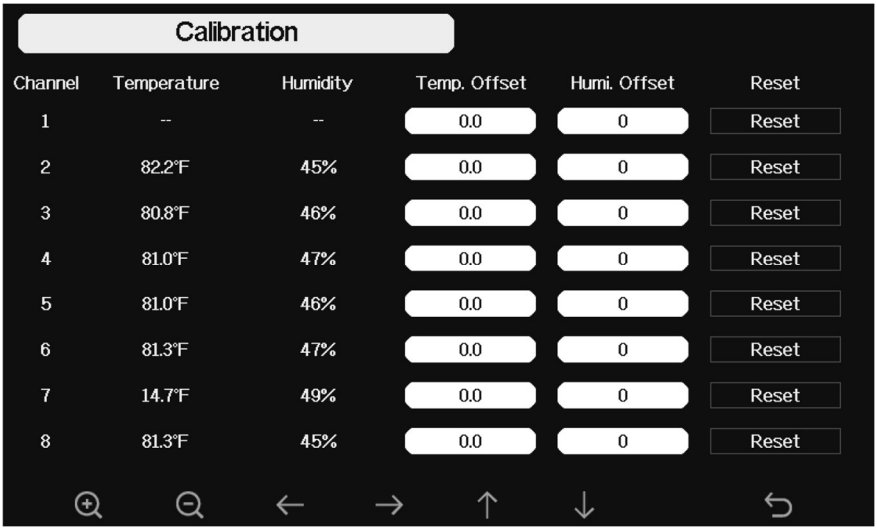


Figure 28: Multi-channel Temperature and Humidity Sensor calibaration Screen

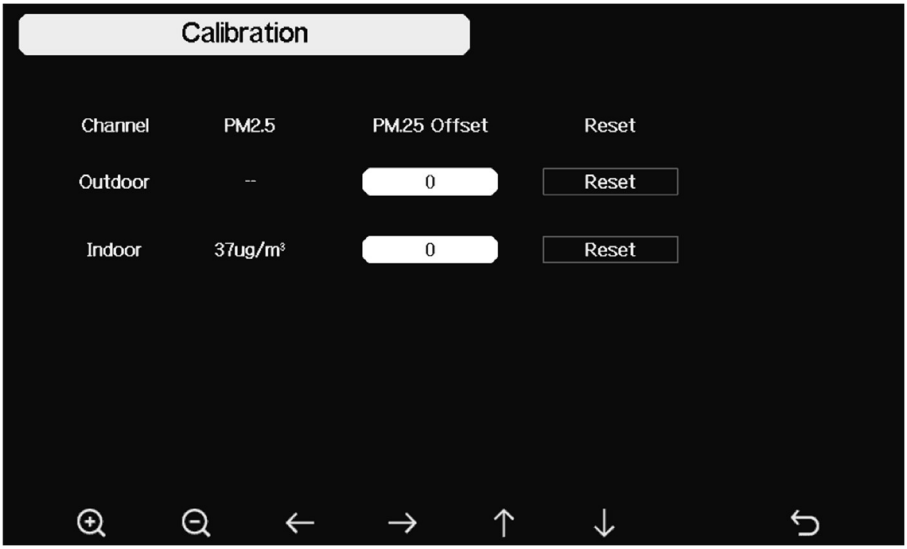


Figure 29: PM2.5 Air Quality Sensor Calibration Screen

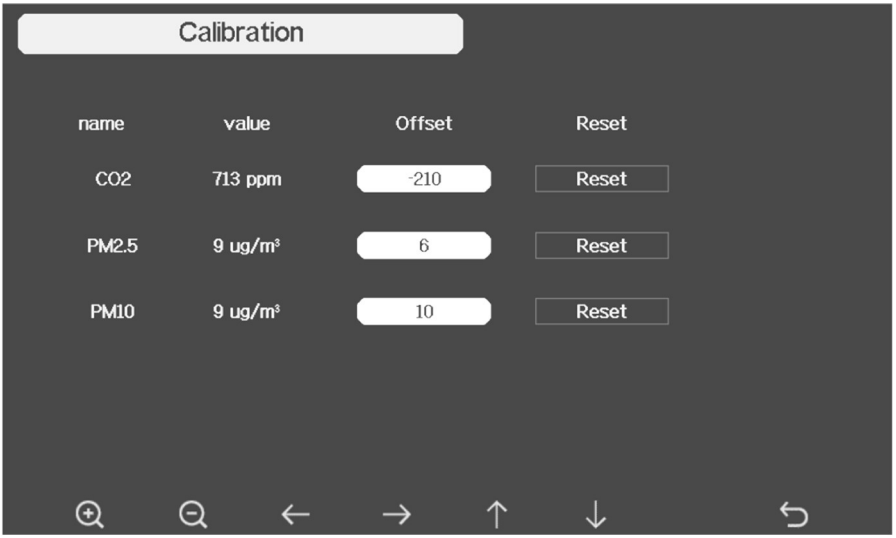


Figure 30: PM2.5, PM10 and CO2 Air Quality Sensor Calibration

Note:

To calibrate the optional soil moisture sensor, please refer to the manual of the WH51 soil moisture senor.

To calibrate the PM2.5 sensor, you'll need to find a reliable source, such as professional devices from your local air quality service.

To calibrate the temp and humidity sensor, please refer to section 4.9.19.

Sensor ID Setup

On this page you can set the following:

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

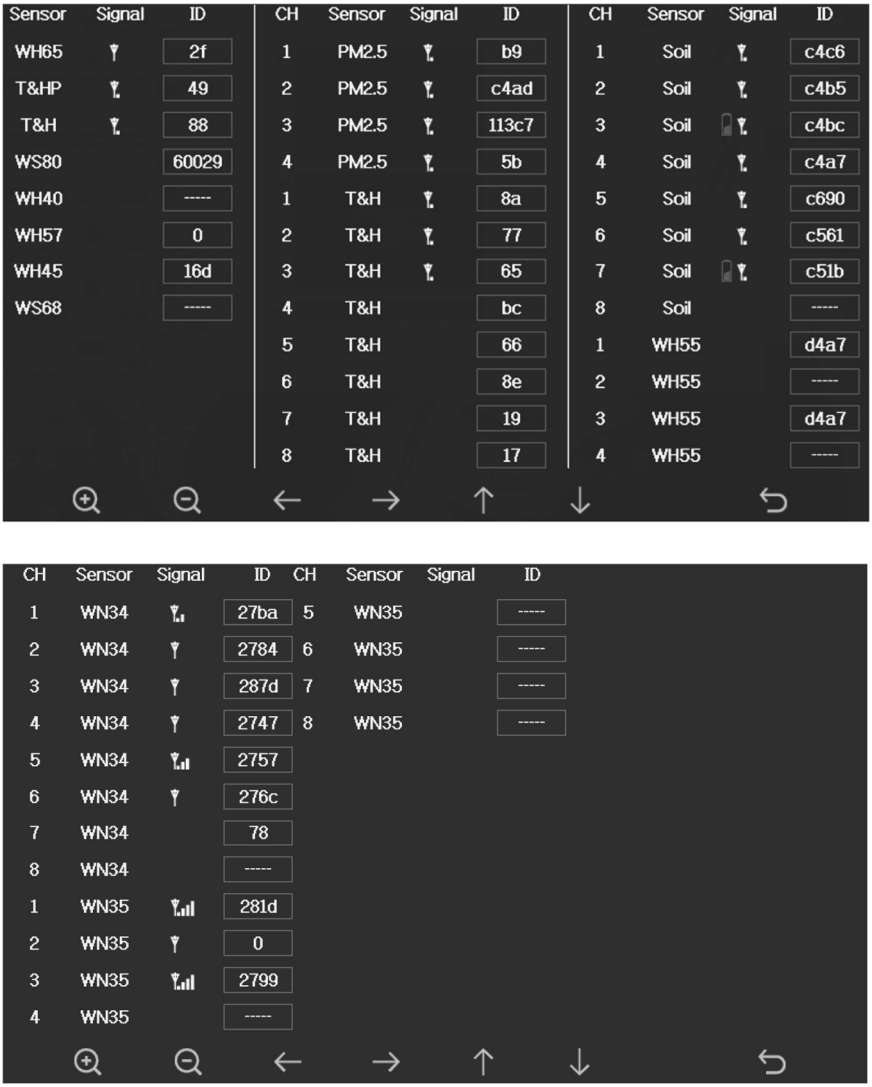
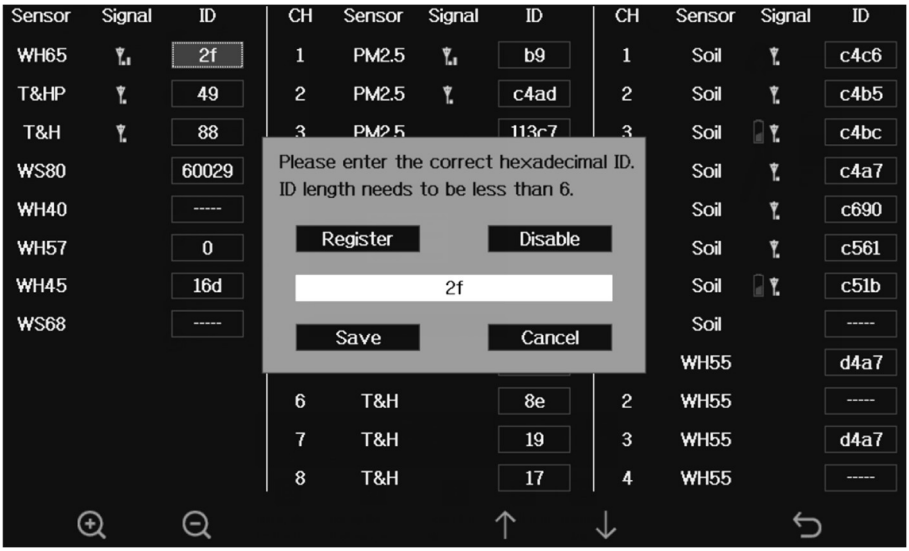
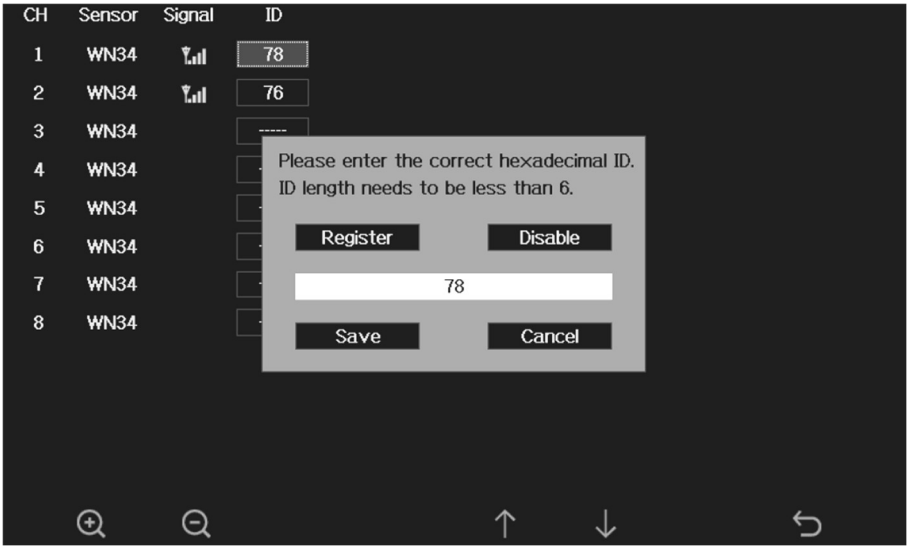


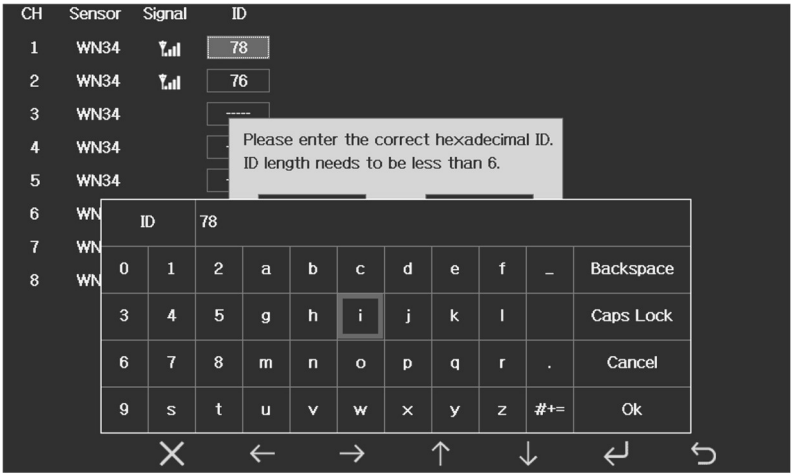
Figure 31: Sensors ID setup Screen

This screen list all sensors can work with HP2564 console. This package just included WS90 outdoor sensor array and T&HP (Temperature, humidity and pressure) indoor sensor. These two sensors signal reception status and ID number will automatically display on the screen if console receives the sensors signal.

The sensor ID is unique and fixed. You can choose **Disable** to disconnect with console, or Register to reconnect with console.







pop up the keyboard or confirm the operation	pop up the keyboard or confirm the operation	Scroll field up	Scroll field down	return to Setup

5.7 Alarm Setting Mode

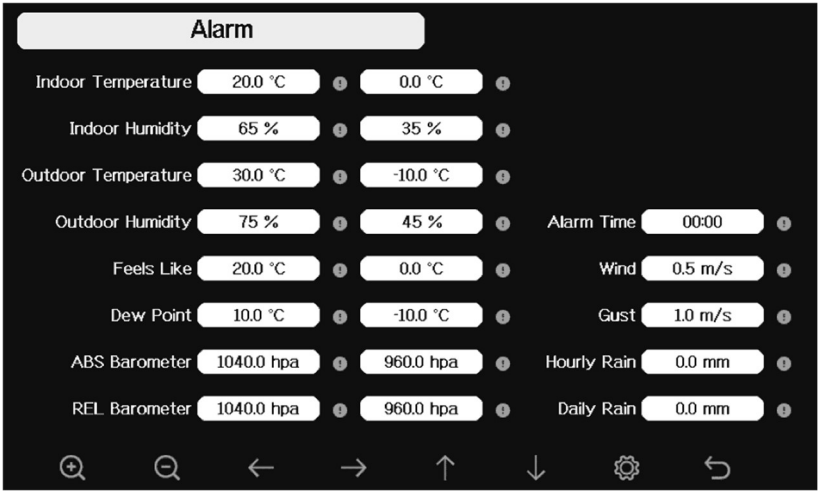


Figure 32: Alarm Setting Screen

Icon	Description
	Select key Press this key to select the unit or scrolls the value
	Select key Press this key to select the unit or scrolls the value.
	Left key Press this key to select the set value.
	Right key Press this key to select the set value.
	Up arrow key Press this key to change the activated option field
	Down arrow key Press this key to change the activated option field
	Set key Press this key to select the Setting sub-Mode
	Return key Press this key to return to previous mode

The first row is high alarm value and the second row is low alarm value. When weather alarm condition has been triggered, that particular alarm will sound for 120 second and the corresponding icon will flash until the weather condition doesn't meet the user set level. Press any key to mute the alarm.

5.8 Calibration Mode

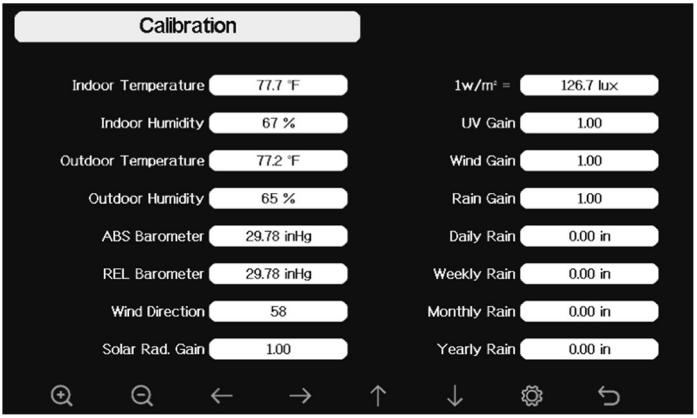


Figure 33: Calibraton Setting Screen

Icon	Description
	**Select key** Press this key to select the unit or scrolls the value
	**Select key** Press this key to select the unit or scrolls the value.
	**Left key** Press this key to select the set value.
	**Right key** Press this key to select the set value.
	**Up arrow key** Press this key to change the activated option field
	**Down arrow key** Press this key to change the activated option field
	**Set key** Press this key to select the Setting sub-Mode
	**Return key** Press this key to return to previous mode

To adjust the parameter, press  to scroll to the parameter you wish to change. Press  to highlight the sign (positive vs. negative, if applicable) and significant digit. Press  or  to change the calibrated value.

Parameter	**Type of Calibration**	**Default**	**Typical Calibration Source**
Temperature	Offset	Current Value	Red Spirit or Mercury Thermometer (1)
Humidity	Offset	Current Value	Sling Psychrometer (2)
ABS Barometer	Offset	Current Value	Calibrated laboratory grade barometer
REL Barometer	Offset	Current Value	Local airport (3)

Wind Direction	Offset	Current Value	GPS, Compass (4)
Solar Radiation	Gain	1.00	Calibrated laboratory grade solar radiation sensor
1 w/m^2	Gain	126.7 lux	Solar radiation conversion from lux to w/m^2 for wavelength correction (5)
UV	Gain	1.00	Calibrated laboratory grade UV sensor
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)
Daily Rain	Offset	Current Value	Apply an offset if the weather station was not operating for the entire day.
Weekly Rain	Offset	Current Value	Apply an offset if the weather station was not operating for the entire week.
Monthly Rain	Offset	Current Value	Apply an offset if the weather station was not operating for the entire month.
Yearly Rain	Offset	Current Value	Apply an offset if the weather station was not operating for the entire year.

(1) 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 3 hours. Compare this temperature to the fluid thermometer and adjust the console to match the fluid thermometer.

(2) 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 ± 5%. To improve this accuracy, the indoor and outdoor humidity can be calibrated using an accurate source, such as a sling psychrometer.

(3) The display console 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.

(4) Only use this if you improperly installed the weather station sensor array, and did not point the direction reference to true north.

(5) The default conversion factor based on the wavelength for bright sunlight is 126.7 lux / w/m^2 . 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 evapotransporation and solar panel efficiency.

(6) 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 20' tall and you mount the sensor on a 5' pole:

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

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 (not included) and a constant speed, high speed fan.

(7) The rain collector is calibrated at the factory based on the funnel diameter. The bucket tips every 0.01" or 0.1m of rain (referred to as resolution). The accumulated rainfall can be compared to a sight glass rain gauge with an aperture of at least 4" or 0.1m.
Make sure you periodically clean the rain gauge funnel.

Note: The purpose of calibration is to fine tune or correct for any sensor error associated with the devices margin of error. Errors can occur due to electronic variation (example, the temperature sensor is a resistive thermal device or

RTD, the humidity sensor is a capacitance device), mechanical variation, or degradation (wearing of moving parts, contamination of sensors).

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

NOTE: UV Calibration MUST be performed every 2 to 3 months to improve results. Over time, UV Index may alter results based on bright and strong sunlight conditions. This is why diligent UV Calibration is recommended.

5.9 Factory reset

Figure 34: Factory Reset Screen

5.9.1 Re-register indoor transmitter

Press  or  key to select re-register indoor transmitter. Press  or  key to popup the Message Box ”Register a new indoor transmitter?” Press  or  to select Yes or No. Press the  or  key to confirm the selection.

5.9.2 Re-register outdoor transmitter

Please reference section 6.7.1. Procedures and settings are similar to re-register indoor transmitter

5.9.3 Automatic Clear Max/Min

To turn on/off automatically clear Max/Min record at 0:00hr every day.

Press  or  key to select Automatic clear Max/Min. Press  or  key to switch on/off.

When it is selected with ON option, min/max will be presented as daily min/max, and with OFF option selected, it is for history min/max record.

5.9.4 Reset to Factory

Press  or  key to select Reset to Factory. Press  or  key to popup the Message Box ”Reset to factory default?” Press  or  to select Yes or No. Press the  or  key to confirm the selection.

5.9.5 Clear History

Press  or  key to select Clear History. Press  or  key to

popup the Message Box ”Clear the history record?” Press  or  to select Yes or No. Press the  or  key to confirm the selection.

5.9.6 Clear Max/Min

Press  or  key to select Clear Max/Min. Press  or  key to popup the Message Box ”Clear the max/min record?” Press  or  to select Yes or No. Press the  or  key to confirm the selection.

5.9.7 Backup data

Press  or  key to select Backup data. Press  or  key to popup the Message Box ”Copy history data to SD card?” Press  or  to select OK or Cancel. Press the  or  key to confirm the selection.

Note: You need to insert a SD card(not included) into the console before using this function.

5.9.8 About information

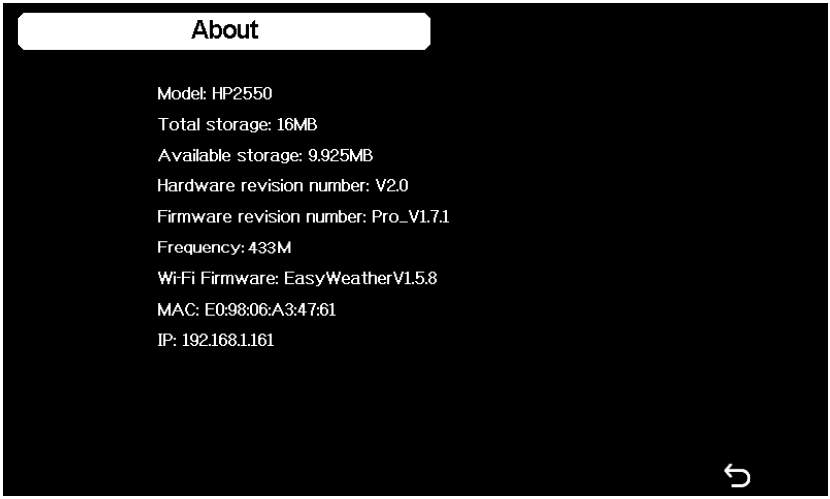


Figure 35: About information Screen

Note: This figure is just for reference(model and frequency will change according to different market). The actual display console may be with higher firmware version than this manual described because we will update the firmware occasionally.

5.9.9 Language

Press  or  key to select Language.

Press  or  key to switch different language display.

6 Other Console Functions

6.1 Beaufort Wind Force Scale

If you have selected the use of Beaufort wind speed units, you can use the table below for reference. The Beaufort scale is based on qualitative wind conditions and how they would affect a ship's (frigate) sails (so yes, it is an "old" standard). It is therefore less precise than the other scales but is still in use in various locales.

Wind speed	Beaufort number	Description
0 - 1 mph, or 0 - 1.6 km/h	0	Calm
1 - 3 mph, or 1.6 - 4.8 km/h	1	Light air
3 - 7 mph, or 4.8 - 11.3 km/h	2	Light breeze
7 - 12 mph, or 11.3 -1 9.3 km/h	3	Gentile breeze
12 - 18 mph, or 19.3 - 29.0 km/h	4	Moderate breeze
18 - 24 mph, or 29.0 - 38.6 km/h	5	Fresh breeze
24 - 31 mph, or 38.6 - 49.9 km/h	6	String breeze
31 - 38 mph, or 49.9 - 61.2 km/h	7	Near gale
38 - 46 mph, or 61.2 - 74.1 km/h	8	Gale
46 - 54 mph, or 74.1 - 86.9 km/h	9	Strong gale
55 - 63 mph, or 88.5 - 101.4 km/h	10	Storm
64 - 73 mph, or 103 - 117.5 km/h	11	Violent storm
74 mph and above, or 119.1 km/h and above	12	Hurricane

Table: Beaufort wind force scale

6.2 UVI Range

The UV-index is a value that gives an indication of the strength of harmful UV radiation and can be helpful to know when protection from the sun is advised.

UV Radiation	UVI	Description
0 - 99 uW/cm2	0	Low
99 - 540 uW/cm2	1	Low
540 - 1000 uW/cm2	2	Low
1000 -1400 uW/cm2	3	Moderate
1400 - 1843 uW/cm2	4	Moderate
1843 - 2292 uW/cm2	5	High
2292 - 2734 uW/cm2	6	High
2734 - 3138 uW/cm2	7	high
3138 - 3648 uW/cm2	8	Very high
3648 - 4196 uW/cm2	9	Very high

4196 - 4707 uW/cm2	10	Very high
4707 - 5209 uW/cm2	11	Extreme
5209 - 5735 uW/cm2	12	Extreme
5735 - 6276 uW/cm2	13	Extreme
6276 - 6778 uW/cm2	14	Extreme
6778 uw/cm2 and above	15	Extreme

6.3 Weather Forecasting

The seven weather icons are Sunny, Partly Cloudy, Cloudy, Rainy, Stormy, Snowy and Storm Snowy.

The forecast icon is based on the rate of change of barometric pressure. Please allow at least **one month** for the weather station to learn the barometric pressure over time.

Sunny	**Partly Cloudy**	**WCloudy**
		
Pressure increases for a sustained period of time	Pressure increases slightly or initial power up	Pressure decreases slightly
Rainy	**Stormy**	**Snowy**
		
Pressure decreases for a sustained period of time	Pressure rapidly decreases	Pressure decreases for a sustained period of time and temp ≤0℃
Storm Snowy		
		
Pressure rapidly decreases, and temperature ≤0℃		

Note: When outdoor temperature is below 0 and the forecast is Rainy or Stormy, the LCD will display Snowy and Storm Snowy

6.4 Lightning Alert

The lightning icon  will appear if the Dew Point exceeds 70 F. This means there is a chance of lightning storms forming.

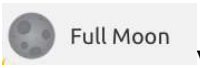
6.5 Weather Forecasting Description and Limitations

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.

6.6 Moon Phase

In the event the moon phase is 100%, the icon 

will appear in its place. In the event of 0%, the word “New Moon” will appear in its place.

Moon Phase	Image	Moon Phase	Image

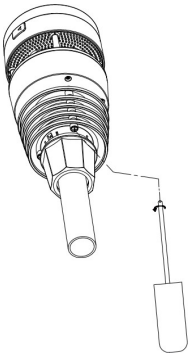
Day 1		Day 14	
Day 2		Day 15	
Day 3		Day 16	
Day 4		Day 17	
Day 5		Day 18	
Day 6		Day 19	
Day 7		Day 20	
Day 8		Day 21	
Day 9		Day 22	
Day 10		Day 23	
Day 11		Day 24	
Day 12		Day 25	
Day 13 Full Moon		Day 26 New Moon	

7. Maintainance

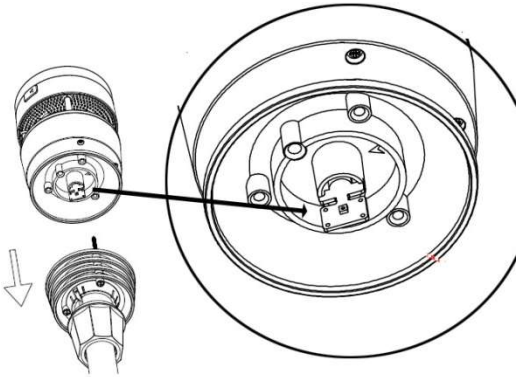
Replacing Batteries Regularly

The Temperature and Humidity Sensor Kit can be replaced whenever required.

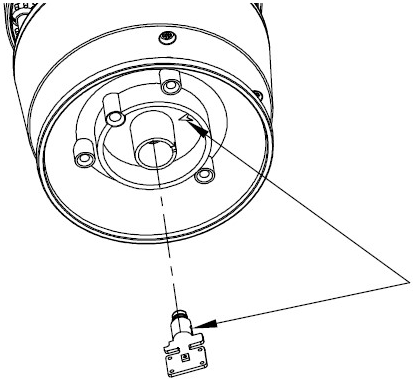
1. Use screwdriver to uptight the screws of the sensor.



2. Unplug the old sensor



3. Replace the old Temp & Humidity sensor with new one



8. Troubleshooting Guide

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

Problem	Solution
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 Installation. 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 with console by powering down and up the console with the sensor array about 10 feet away. Bring the sensor array inside the house (you can disconnect it from the rest of the sensors). The LED next to the battery compartment will flash every 8.8 seconds. If the LED is not flashing every 8.8 seconds… Replace the batteries in the outside sensor array. If the batteries were recently replaced, check the polarity. If the sensor is flashing every 8.8 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

Problem	Solution
	sensor array and the console has not been reset. The solution may be as simple as **powering down and up the console**. Replace the batteries in the outside sensor array. With the sensor array and console 10 feet away from each other, remove AC power from the display console and wait 10 seconds. Re-connect power.
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 6.6.
Absolute pressure does not agree with official reporting station	You may be viewing the relative pressure, not the absolute pressure. Select the absolute pressure. Make sure you properly calibrate the sensor to an official local weather station. Reference Section 5.12 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 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.

Problem	Solution
	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 3. Make sure the date and time is correct on the console. If incorrect, you may be reporting old data, not real time data. 4. Make sure your time zone is set properly. If incorrect, you may be reporting old data, not real time data. 5. Check your router firewall settings. The console sends data via Port 80.
No WiFi connection	1. Check for WiFi signal strength symbol on the display  . If wireless connectivity is successful and reporting to Wunderground.com, the WiFi icon  will be displayed the home page. 2. Make sure your modem WiFi settings are correct (network name, password and security settings).

8. Specifications

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

Outdoor sensor	Specification
Transmission distance in open field	150 m (450 ft.)
RF Frequency	868MHz
Temperature range	-40°C – 60°C (-40°F - 140°F)
Temperature accuracy	± 0.3°C, or ± 0.6°F
Temperature resolution	0.1°C, or 0.1°F
Humidity range	1% ~ 99%
Humidity accuracy	±3.5%
Humidity resolution	1%
Rain volume display range	0 – 9999 mm
Rain volume accuracy	± 10%
Rain volume resolution	0.1mm/0.01inch
Wind speed range	0 – 40 m/s (0 ~ 89mph)
Wind speed accuracy	<10m/s, +/-0.5m/s ≥10m/s, +/-5%
Wind direction accuracy	<2m/s, ±10° ≥2m/s, ±7°
UV-Index range	0 - 15
Light range	0 – 200 kLux
Light accuracy	± 15%
Sensor reporting interval	8.8s

Table: Outdoor sensor specification

Indoor sensor	Specification
Temperature range	-10°C – 60°C (14°F - 140°F)
Temperature resolution	0.1°C, or 0.1°F
Humidity range	10% ~ 99%
Humidity resolution	1%
Barometric pressure range	300 – 1,100 hPa (8.85 – 32.5 inHg)
Barometric pressure accuracy	± 5 hPa in 700 – 1,100 hPa range
Barometric pressure resolution	0.1 hPa (0.01 inHg)
Sensor reporting interval	60 seconds
Alarm Duration	120 seconds

Table: Indoor sensor specification

Power	Specification
Base station/console	5V 1A DC Adapter (a USB to 2.5*0.7mm DC 5V power plug connector cable included)
Outdoor sensor	Solar panel (built-in) 6.5V/4mA
Outdoor sensor (backup)	2 x AA 1.5V battery (not included)

Table: Power specification

The primary power source for the outdoor sensor is the solar panel. When available solar power (light over recent period) is insufficient, the batteries will be used. In outdoor climates that frequently have sustained temperatures below 0°C (or 32°F) the use of Lithium batteries is strongly suggested as these are performing better than Alkaline batteries under such circumstances.

Transmission between gateway and Wi-Fi router

Transmission distance in open field: 50 m (165 ft.) depending on router and environment
RF Frequency: 2.4 GHz
WLAN and Ethernet: 802.11 b/g/n (802.11n, Max 150 Mbps)
Updates on the Internet: Customize 1-5 minutes (recommend 1 minute)

Caution !

This booklet may contain errors or misprints. The information is contains is regularly checked and correction are included in subsequence editions. We disclaim any responsibility for any printing error, or their consequences. The specification of this product may change without prior notice.

General safety instructions

Danger of asphyxiation:

Keep all packaging materials (plastic bags, rubber bands, etc.) away from children. There is a danger of suffocation!

Danger of burns:

Caution! Leaking / leaking battery acid can lead to burns! Avoid contact of battery acid with eyes, mucous membranes and skin. In case of contact, rinse the affected areas immediately with clear water and consult a doctor.

Risk of electric shock:

Children must not be unattended with the device, because the device contains electronic parts which are operated by means of a power source. The device may only be used as described in the instructions. If not, there is a risk of electric shock.

Danger of fire & explosion:

Use only recommended batteries. Never short-circuit the unit or batteries. Never throw the device or batteries into a fire! Overheating and improper handling may result in short circuits which can cause fires and explosions.

Important:

If there is a defect, contact your dealer immediately. Never disassemble the device! The dealer will contact the service department. Never expose the device to water! Protect the device from vibrations. Only use recommended batteries. Never mix batteries - Always replace empty batteries with a complete set of full power batteries. If the unit is not powered for a longer period of time or is not in use, remove the batteries from the unit. The manufacturer accepts no liability for incorrectly inserted batteries!

Notes on the return of batteries according to §12 BatterieVO: Batteries do not belong in the household waste. Please dispose of all batteries as required by law, disposal in domestic waste is expressly prohibited. Batteries and rechargeable batteries can be dispensed free of charge at municipal collection points or in the shops on the spot.

www.froggit.de

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HRB 64734
Geschaeftsfuehrer: Peter Haefele,
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WEEE Reg. Nr. 66110125

declaration of conformity

Hereby we declare, HS-Group GmbH & Co.KG, Escherstr. 31, 50733 D-Cologne, that this product is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.
The declaration of conformity for this product can be found at: www.froggit.de or on request.