WiFi 8-Channel Wireless Thermo-Hygrometer User Manual

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1. Introduction

Thank you for your purchase of the WiFi Wireless Thermo-Hygrometer. The following user guide provides step by step instructions for installation, operation and troubleshooting.

2. Getting Started

TheWiFi Wireless Thermo-Hygrometer consists of an indoor display console (receiver + WiFi transmitter) and an indoor / outdoor thermo-hygrometer.

2.1 Parts List

QTY	Item
1	Display Console Dimensions (LxHxW): 67.5 x 90 x 26.8 mm (2.65 x 3.54 x 1.06")
1	Thermo-hygrometer transmitter (WH31) Dimensions (LxHxW): 122 x 40 x 18 mm (4.80 x 1.57 x 0.71")
1	5V DC Adaptor
1	User manual

2.2 Indoor / Outdoor Thermo-Hygrometer Setup

Note: Do not use rechargeable batteries. We recommend fresh alkaline batteries for outdoor temperature ranges between -20 °C and 60 °C and fresh lithium batteries for outdoor temperature ranges between -40 °C and 60 °C.

1. Remove the battery door on the back of the transmitter(s) by sliding down the battery door, as shown in Figure 1 .
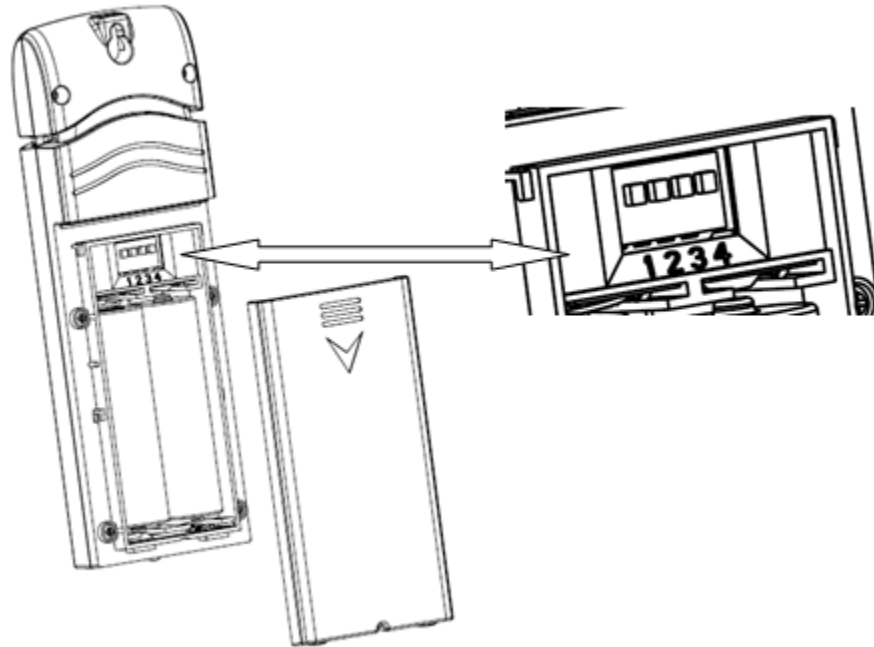

Figure 1

2. **BEFORE** inserting the batteries, locate the dip switches on the inside cover of the lid of the transmitter.

3. **Channel Number:** This device supports up to eight transmitters, and includes three transmitters. To set each channel number (the default is Channel 1), change Dip Switches 1, 2 and 3, as referenced in Figure 2.

4. **Temperature Units of Measure:** To change the transmitter display units of measure (°F vs. °C), change Dip Switch 4, as referenced in Figure 2.
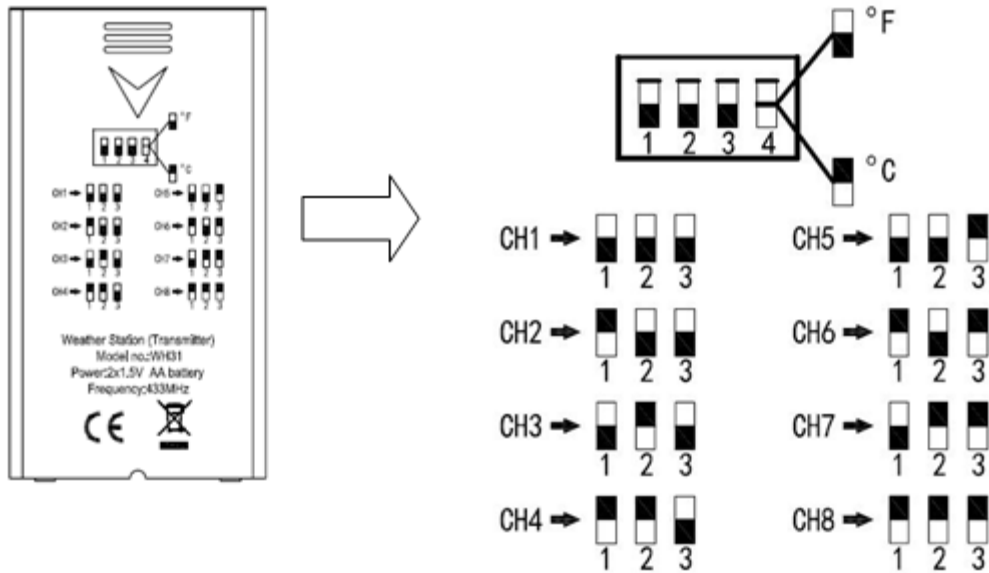
■ Switch in down position. ☐ Switch in up position.

Figure 2

5. Insert two AA batteries.
6. Verify the correct channel number (CH) and temperature units of measure (°F vs. °C) are on the display, as shown in Figure 3.
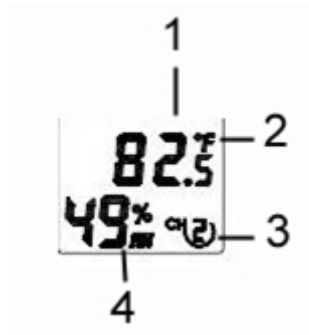

Figure 3

(1) temperature
(2) temperature units (°F vs. °C)
(3) channel number
(4) relative humidity

7. Close the battery door.
8. Repeat for the additional remote transmitters, verifying each remote is on a different channel.

2.3 Sensor Placement

It is recommended you mount the remote sensor outside on a north facing wall, in a shaded area, at a height at or above the receiver. If a north facing wall is not possible, choose a shaded area, under an eve.

Direct sunlight and radiant heat sources will result in inaccurate temperature readings. Although the sensor is weatherproof, it is best to mount in a well-protected area, such as an eve.

1. Use a screw or nail to affix the remote sensor to the wall, as shown in Figure 4.
2. Hang the remote sensor up on string or zip tie, as shown in Figure 5.

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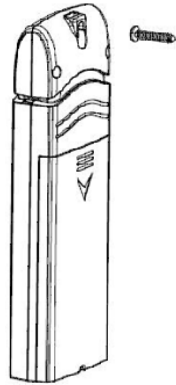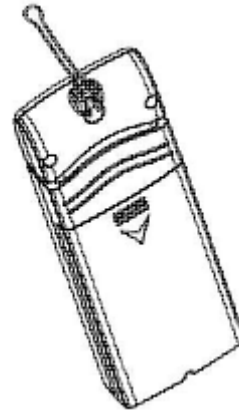

Figure 4   **Figure 5**

2.4 Best Practices for Wireless Communication

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 915 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%

2.5 Display Console

(1) Connect the display console power jack to AC power adapter with the included power adapter, as shown in Figure 6a.
(2) Remove the battery door on the back of the console, and insert 2xAAA batteries per Figure 6b.
(3) Wait several minutes for the remote sensor(s) to synchronize with the display console. Make sure the remote sensor is powered up and about 5 to 10 feet away while waiting for synchronization. The remote search icon OUTDOOR .ıll will be present while searching.

If you have more than one sensor, the channel number will displayed next to the remote search icon.

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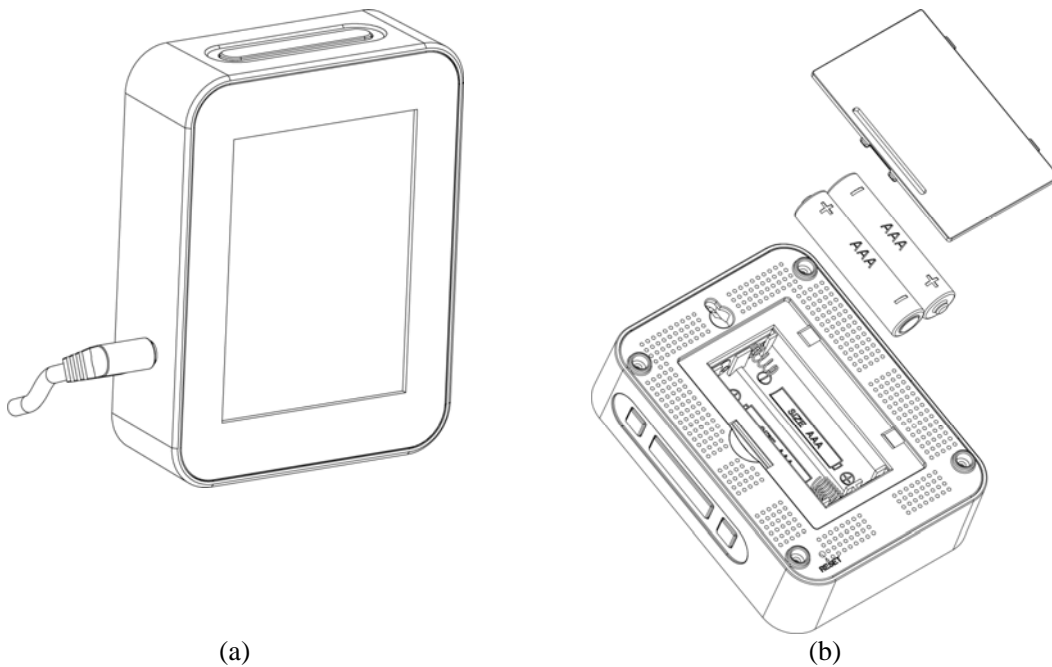

(a)   (b)

Figure 6

2.6 Display Console Probe

The display console includes a 90 cm (about 3 feet) dry probe to accurately measure air temperature, since the console generates heat. The probe should not be touching any surface to accurately measure air temperature.
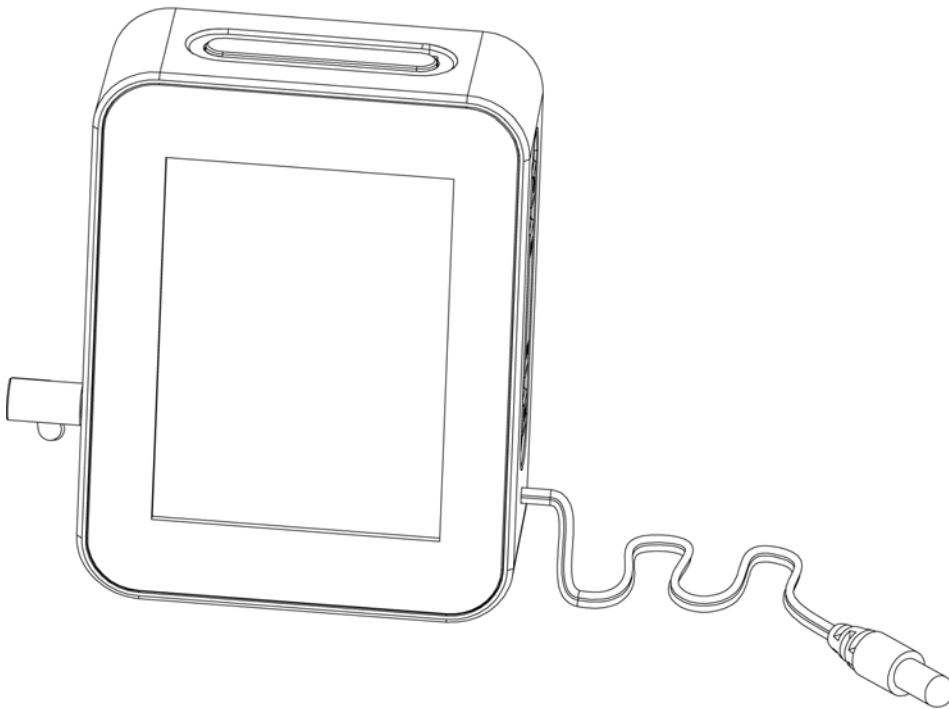

Figure 7

3. Display Console Operation

3.1 Screen Display

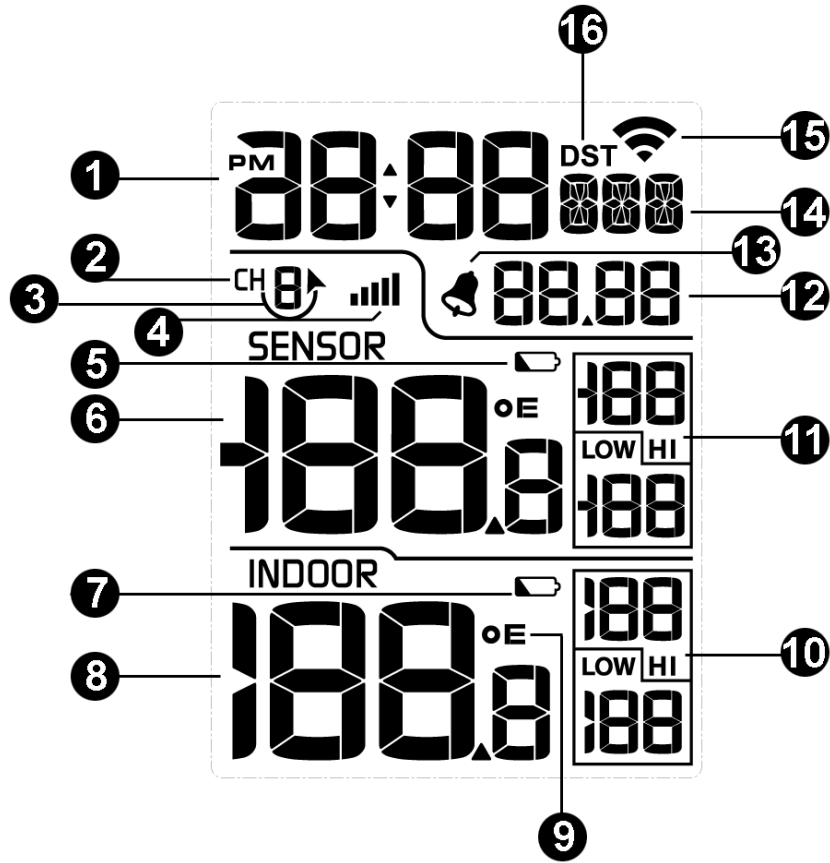The display console home screen layout is shown in Figure 8.

Figure 8

No	Description	No	Description
1	Time	9	Temperature Units of Measure
2	Sensor Channel Number	10	Indoor Hi/Low Temperature
3	Sensor Scroll Icon	11	Sensor Hi/Low Temperature
4	RF Reception	12	Date
5	Sensor Low Battery Indicator	13	Alarm icon
6	Sensor Temperature	14	Day of Week
7	Indoor Low Battery Indicator	15	WIFI icon
8	Indoor Temperature	16	DST

3.2 Console Initialization

After the console is connected to AC power, the console will display the software version number two seconds after power up, as shown in Figure 9.

Figure 9

The console will display all of the LCD segments for three seconds after power up as shown in Figure 10, the indoor conditions will immediately update, and the remote sensors array will register within a few minutes.

Figure 10

3.2.1 Button Operation

The operation buttons are on the side and top of the console, as shown in Figure 11:
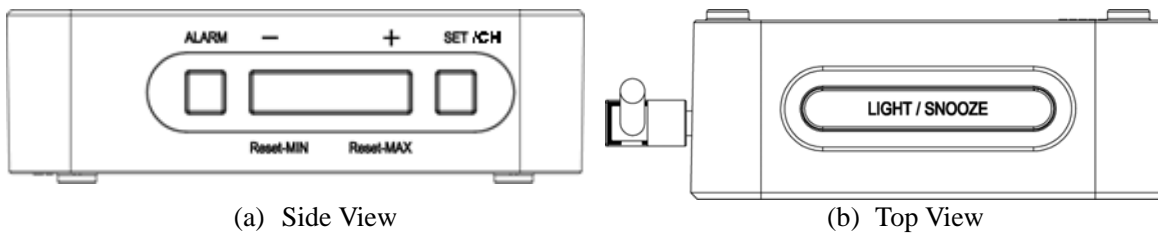- (a) ALARM, -/Reset-MIN, +/Reset-MAX, SET/CH
- (b) LIGHT / SNOOZE

(a) Side View   (b) Top View

Figure 11

The console has 5 buttons at the bottom for easy operation:

Key	Description
SET/CH	• Press the **SET/CH** button to change between channels 1-8. • Press and hold the **SET/CH** button for two seconds to enter Set Mode.
+ / Reset-MAX	• Press the **+ / Reset-MAX** button for five seconds, and the maximum indoor and outdoor temperature will reset to the current value on the display console. • While in SET mode, press to increase the value. Press and hold for two seconds to increase the value rapidly.
- / Reset-MIN	• Press the **- / Reset-MIN** button for five seconds, and the minimum indoor and outdoor temperature will reset to the current value on the display console. • While in SET mode, press to decrease the value. Press and hold for two seconds to decrease the value rapidly.
ALARM	• Press and release the **ALARM** button to enter alarm mode. • Press and hold the **ALARM** button for two seconds to enter the alarm setting mode.
LIGHT/SNOOZE	• When connected to AC power, press and hold for three seconds to turn on backlight permanently. With the backlight turned on, press and hold for five seconds to turn off the backlight. • When powered by batteries, press to turn on the backlight for 3 seconds.

3.3 Set Mode

Press and hold the **SET/CH** button for two seconds to enter the SET Mode. To proceed to the next setting, press (do not hold) the **SET/CH** button.

To exit the SET mode at any time, press the **LIGHT / SNOOZE** button.

Figure 12 summarizes the set mode sequence and commands.

Command	Mode	Description	Settings
SET/CH + **2 seconds**	BEEP	Turns on or off the beep with each keystroke.	Press +/**Reset-MAX** to toggle OFF and ON
SET/CH	DST	Observe Daylight Savings Time (set to **OFF** in Arizona and Hawaii, **ON** everywhere else)	Press +/**Reset-MAX** to toggle OFF and ON
SET/CH	ZON	Time Zone (TZ)	Press +/**Reset-MAX** to increase or -/**Reset-MIN** to decrease (reference Figure 13).
SET/CH	12H	12/24 Hour Format	Press +/**Reset-MAX** to toggle between 12 hour (12h) and 24 hour (24h) format
SET/CH	HR	Hour of Day	Press +/**Reset-MAX** to increase or -/**Reset-MIN** to decrease
SET/CH	MIN	Minute of Day	Press +/**Reset-MAX** to increase or -/**Reset-MIN** to decrease
SET/CH	M-D	Month Day Format	Press +/**Reset-MAX** to toggle between M-D (month/day) format and D-M (day/month) format
SET/CH	Y	Year	Press +/**Reset-MAX** to increase or -/**Reset-MIN** to decrease
SET/CH	M	Month of Year	Press +/**Reset-MAX** to increase or -/**Reset-MIN** to decrease
SET/CH	D	Day of Month	Press +/**Reset-MAX** to increase or -/**Reset-MIN** to decrease
SET/CH	°F	Temperature Units of Measure	Press +/**Reset-MAX** to toggle between °F and °C
SET/CH	Exit Set Mode		

SET/CH + 2 seconds means press and hold the SET/CH button for two seconds.
SET/CH means press the SET/CH button.

Figure 12

3.3.1 Time Zones

The following table summarizes time zones around the world.

Hours from GMT	Time Zone	Cities
-12	IDLW: International Date Line West	---
-11	NT: Nome	Nome, AK
-10	AHST: Alaska-Hawaii Standard CAT: Central Alaska HST: Hawaii Standard	Honolulu, HI
-9	YST: Yukon Standard	Yukon Territory
-8	PST: Pacific Standard	Los Angeles, CA, USA
-7	MST: Mountain Standard	Denver, CO, USA
-6	CST: Central Standard	Chicago, IL, USA
-5	EST: Eastern Standard	New York, NY, USA
-4	AST: Atlantic Standard	Caracas
-3	---	São Paulo, Brazil
-2	AT: Azores	Azores, Cape Verde Islands
-1	WAT: West Africa	---
0	GMT: Greenwich Mean	London, England

Hours from GMT	Time Zone	Cities
	WET: Western European	
1	CET: Central European	Paris, France
2	EET: Eastern European	Athens, Greece
3	BT: Baghdad	Moscow, Russia
4	---	Abu Dhabi, UAE
5	---	Tashkent
6	---	Astana
7	---	Bangkok
8	CCT: China Coast	Bejing
9	JST: Japan Standard	Tokyo
10	GST: Guam Standard	Sydney
11	---	Magadan
12	IDLE: International Date Line East NZST: New Zealand Standard	Wellington, New Zealand

Figure 13

3.3.2   Auto Set Time

When the console is connected to WiFi and the Internet, the time will automatically set.

3.3.3   Setting Time Alarm

To view the alarm time, press the **ALARM** button.

Press and hold the **ALARM** button for two seconds to enter the ALARM Set Mode. To save and proceed to the next alarm setting, press (do not hold) the **SET/CH** button.

To exit the alarm mode at any time, press the **LIGHT / SNOOZE** button.

The time alarm will sound for 120 seconds, and can be disabled by pressing the **LIGHT / SNOOZE** button.

Figure 14 summarizes the alarm mode sequence and commands.

Command	Mode	Settings
ALARM + 2 seconds	Turns alarm ON or OFF	Press +/**Reset-MAX** to toggle OFF and ON When the alarm is on, the alarm time icon 🔔 will appear.
SET/CH	Alarm Hour	Press +/**Reset-MAX** to increase or **-/Reset-MIN** to decrease
SET/CH	Alarm Minute	Press +/**Reset-MAX** to increase or **-/Reset-MIN** to decrease
SET/CH	Exit alarm settings mode.	

ALARM + 2 seconds means press and hold the ALARM button for two seconds.
SET/CH means press the SET/CH button.
Figure 14

3.4 Max/Min Mode

The minimum and maximum temperature values are displayed on the console for the past 24 hours.

3.4.1   Viewing Max/Min Values

Press the **+ / Reset-MAX** button for five seconds, and the maximum indoor and outdoor temperature will reset to the current value on the display console.

Press the **- / Reset-MIN** button for five seconds, and the minimum indoor and outdoor temperature will reset to the current value on the display console.

3.5 Multiple Channels and Scroll Mode

If you have multiple wireless sensors, while in normal mode, press the **SET/CH** button to the different channels. Temperature, humidity, and MAX/MIN records will be displayed for each channel.

To scroll automatically, press the **SET/CH** button again, and the scroll icon will be displayed next to the channel number, and will scroll every 5 seconds.

3.6 Resynchronize Wireless Sensor

Press and hold the **+/Reset-MAX** and **-/Reset-MIN** buttons at the same time for five seconds, and the display will search for a new transmitter for three minutes. Dashes will be displayed in the outdoor temperature field.

Alternately, you can power down and up the console by removing AC power and batteries.

3.7 Backlight Operation

3.7.1   With AC Adapter

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** button to adjust the brightness between High, Low and Off.

3.7.2   Without AC Adapter

To reduce power consumption, the console will sleep on battery power only, and will not send data to the Internet.

To temporarily turn on the back light for 15 seconds, press the **LIGHT SNOOZE** button.

4.   Live Internet Publishing

The WS-0265 sends data to three free hosting services:

Hosting Service	Website	Description
Weather Undergound	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.

The WS-0265 weather station sends data to the Internet using your WiFi connection.

4.1 Connecting the Weather Station Console to Wi-Fi

To send weather data to these services you must connect your console to the internet via Wi-Fi. The console can only operate using Wi-Fi when the external power adapter is connected and plugged in!

Note: If you are testing the setup with the outdoor sensor package nearby and indoor, you may want to consider connecting to Wi-Fi, but not yet configuring any of the weather services. The reason is that while indoor the temperatures and humidity recorded by the outdoor sensor, and as reported to the weather service(s) will reflect indoor conditions, and not outdoor conditions. Therefore, they will be incorrect. Furthermore, the rainfall bucket may be tripped during handling, causing rain to register while it may not actually have been raining. One way to prevent this is to follow all instructions, except to use an incorrect password, on purpose! Then, after final outdoor installation, come back and change the password after clearing console history. That will start uploading to the services with a clean slate.

4.1.1 Download mobile application

Wi-Fi configuration is done using your mobile device, either iOS or Android. Start by downloading the "WS View" application from the Apple App Store or Google Play store, as appropriate for your device.

4.1.2 Put console in Wi-Fi setup mode

Plug in the external power adapter and connect to the console if you have not already done so. Next, press and hold the GRAPH and MENU buttons simultaneously for five seconds. The Wi-Fi icon ( ) in the top-right of the display will start flashing to indicate the console is waiting for Wi-Fi configuration. The console will now have activated a Wi-Fi network named starting with "EasyWeather Wi-Fi" and you will connect to it with your mobile device.

4.1.3 Connect mobile device to EasyWeather Wi-Fi

Using your phone's Wi-Fi setup capabilities (WLAN setup for Android, Wi-Fi for iOS devices), connect your phone to the EasyWeather network now advertised by the console.

For Android users:
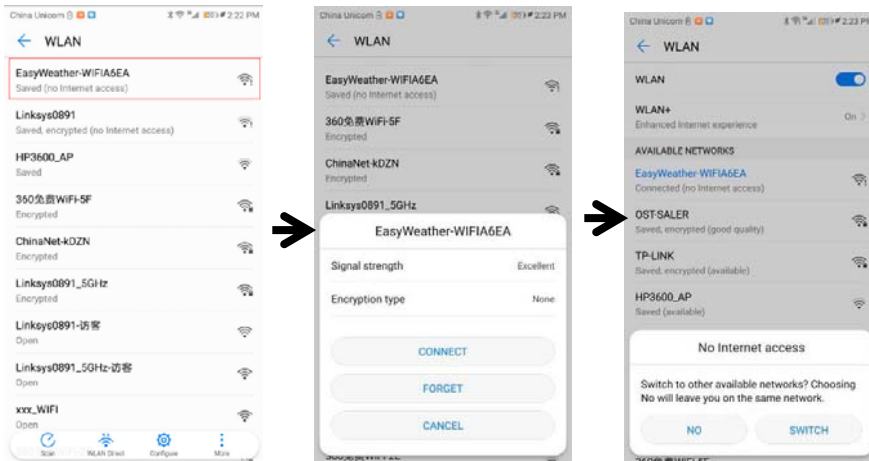
Answer "NO" to the "No Internet access" message!

For iOS users:
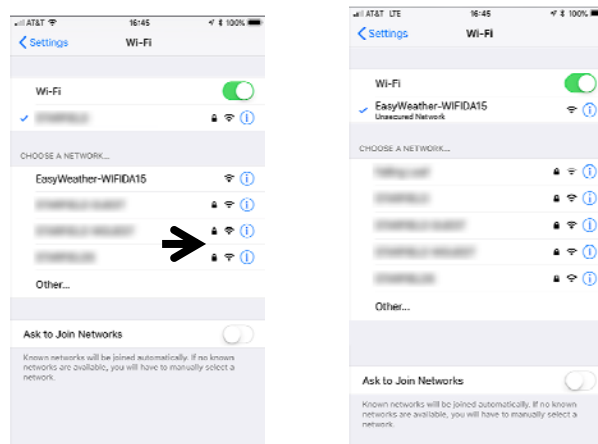
Look for the network named "EasyWeather-WIFI" followed by four characters. Tap on it to connect to that network. You will see a warning "Unsecured Network" under the name of the "EasyWeather-WIFI" network. This is normal and can be ignored.

4.1.4 Register a Personal Weather Station (PWS) with wunderground.com

If you are planning to use wunderground.com you must have an account and register a (new) personal weather station. You may do so on the wunderground.com web site, or you can do this from within the mobile app. Take note of the PWS identifier (ID) and the password that will be generated for you.

4.1.5 Activate setup application

Now activate the application you have downloaded on your mobile device. The following instructions will generally show screen shots for the Android application side by side with the iOS version, or iOS below Android when there is not enough space for side by side.
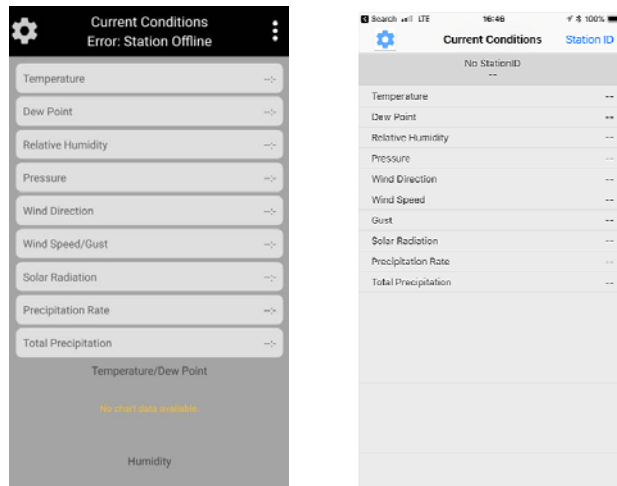
Figure 15: Mobile application – Main screen (Android & iOS)

The main screen will indicate your station is off-line (because it is not yet connected to Wi-Fi). At this point, if you have not already done so, you can register on wunderground.com and create your PWS by pressing on the settings icon and activating the "Register with wunderground" option. Fill out the form and take note of the station ID and password.
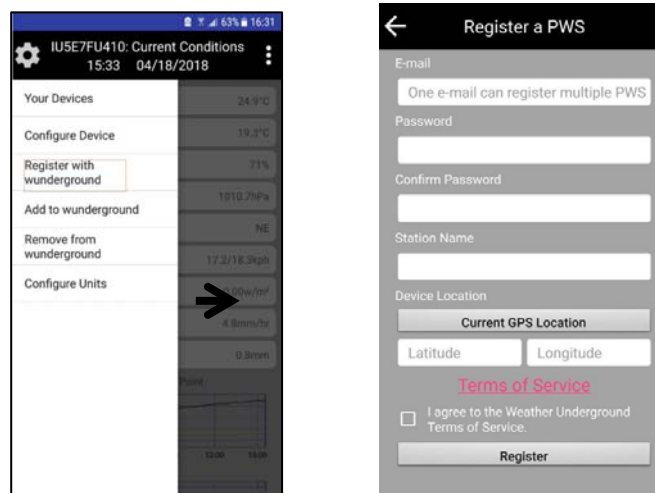
Figure 16: Mobile application – wunderground.com registration (Android)
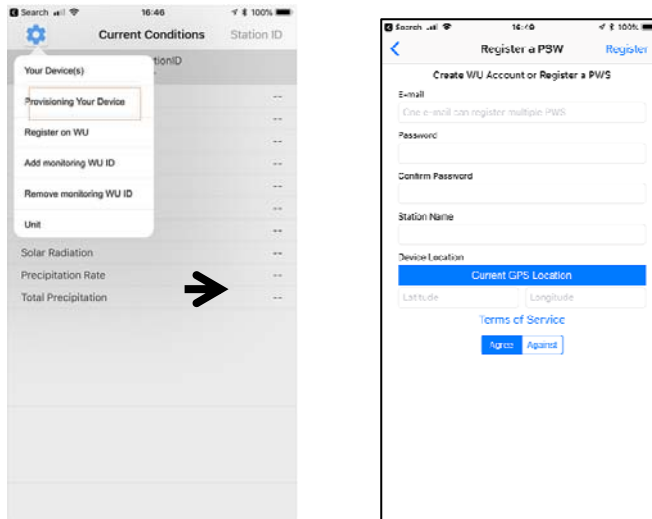
Figure 17: Mobile application - wunderground.com registration (iOS)

Next, tap on the settings icon and select "Configure Device". You will be shown some instructions to read. Press "Next" when ready. You will then be asked for the wunderground.com station ID and password. If you are not planning to use wunderground.com, you may leave this form blank, otherwise enter them and click "Save."
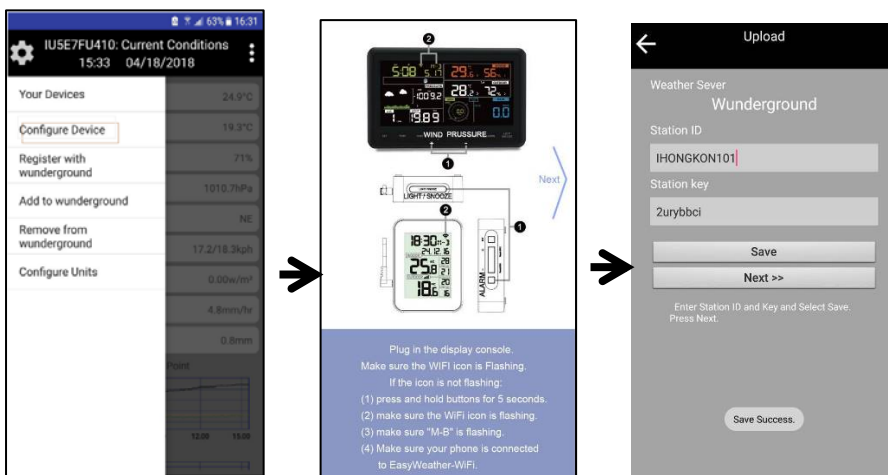
Figure 18: Mobile application – Provisioning device (Android)
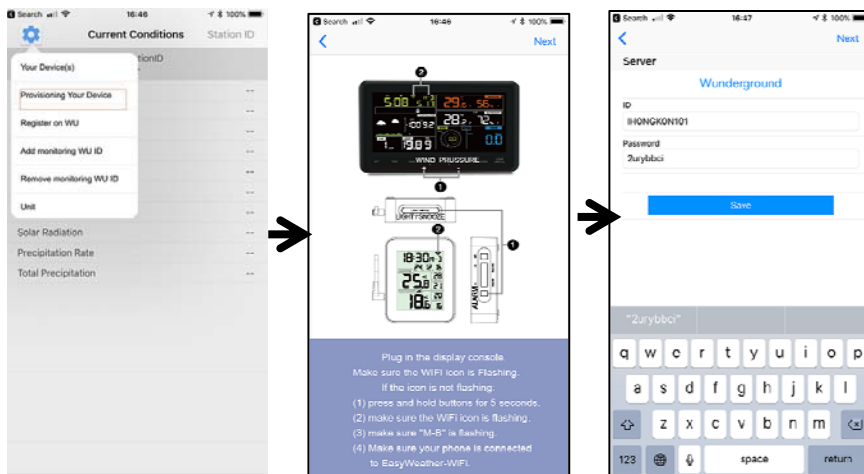
Figure 19: Mobile application – Provisioning device (iOS)

After entering the wunderground.com information (or leaving it blank), tap "Next" and you will be presented with the Wi-Fi mode page. Here you will enter the name of the Wi-Fi network (SSID) you want the console to connect to for Internet access, as well as its password (if applicable). You may also scan for available networks.
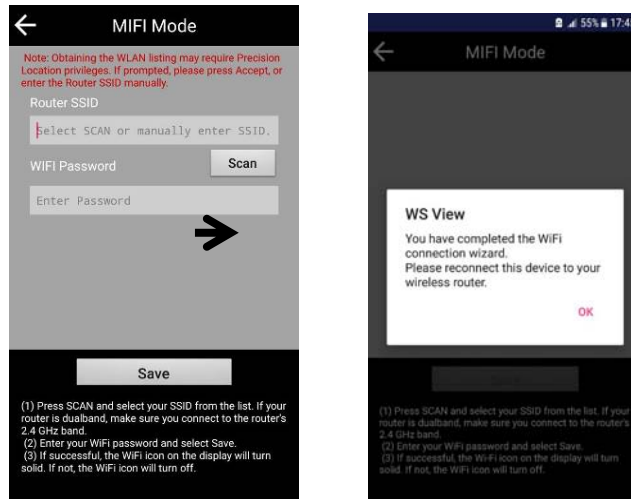
Figure 20: Mobile application – Connect to your Wi-Fi network (Android)
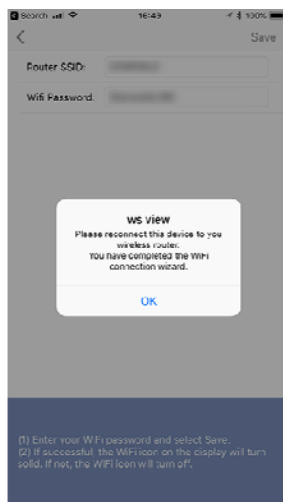
Figure 21: Mobile application – Connect to your Wi-Fi network (iOS)

After entering your Wi-Fi network details, the console will discontinue the EasyWeather Wi-Fi network and connect to your "normal" network. It will also start sending weather data to wunderground.com if you configured it.

Your mobile device may still be configured for the EasyWeather network, or it may have already switched to another available network. Check and make sure your mobile device is now configured for the same network that you configured on the console, so the mobile application can reach the console again.

You should now be able to see your console through the "Your Device(s)" menu option:
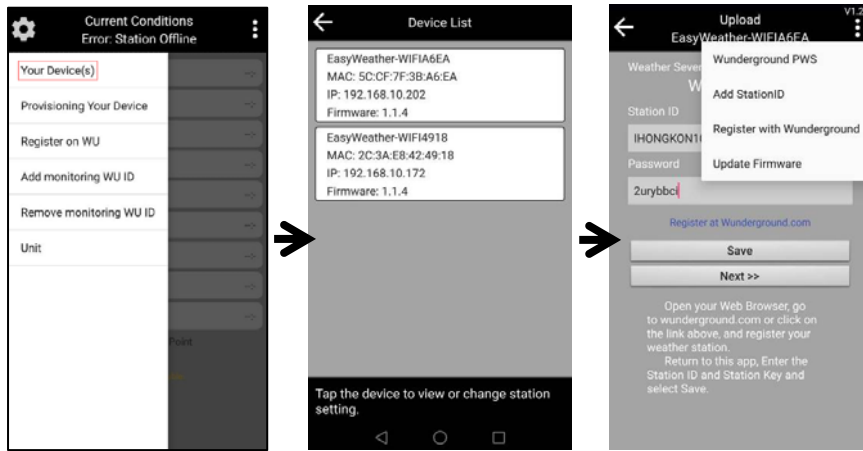
Figure 22: Mobile application – Your devices (Android)
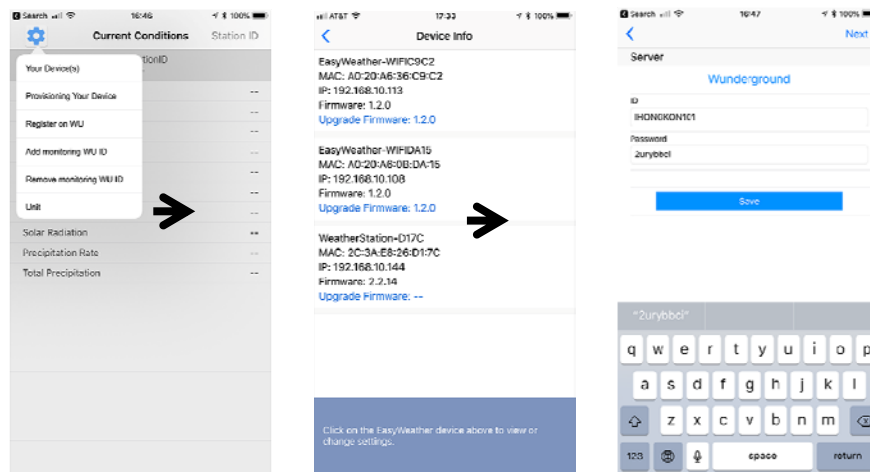
Figure 23: Mobile application – Your devices (iOS)

Tapping on your console's entry in the device list will bring you to the page where you can change WU registration information, or update firmware.

4.2 Registering with and using wunderground.com

If you have not already done setup for wunderground.com during the Wi-Fi setup, you can do so later. Perform the following steps:

1. Visit Wunderground.com and select the **Join** link (1) at the top of the page and select the **Free** (2) sign up option.
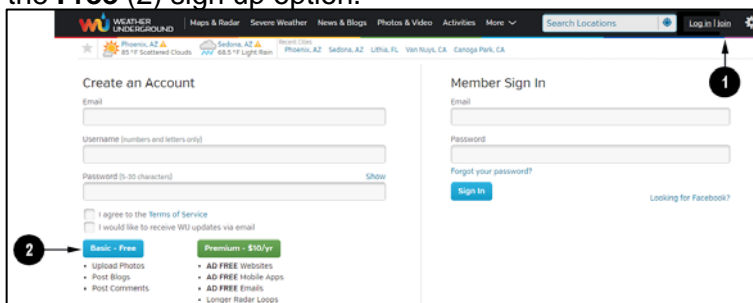
2. Select **More | Register Your PWS** (3)
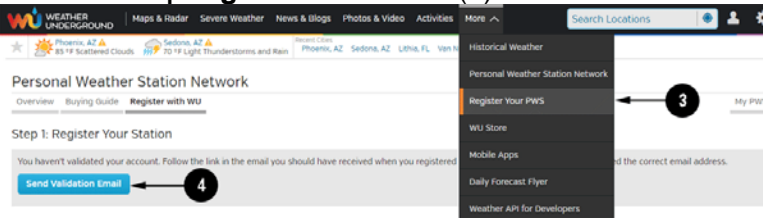
3. Click **Send Validation Email** (4). Respond to the validation email from Wunderground.com (it may take a few minutes).
4. Select **More | Register Your PWS** (5) again. This time you will be asked details about your weather station. Go ahead and fill out the form
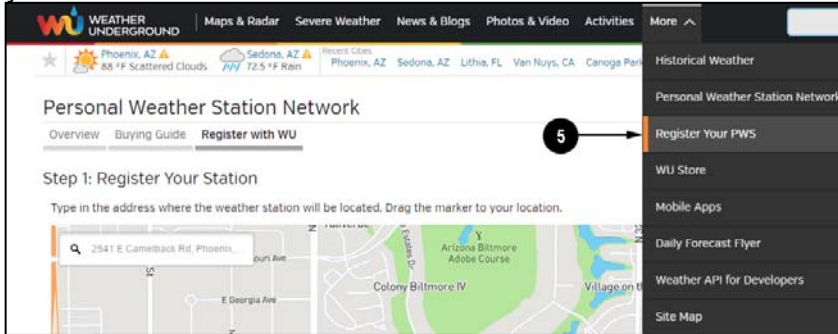
After completing the weather station, you will see something like this:

Congratulations. Your station is now registered with Wunderground!

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

Your Station ID:

KAZPHOEN424

Your Station Key/Password:

mdreeley
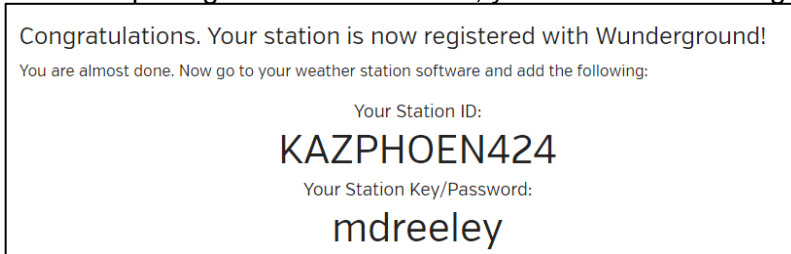
Your station ID will have the form: KSSCCCC###, where K is for USA station (I for international), SS is your state, CCCC is an abbreviation for your city and ### is the station number in that city. In the example above, you see station 424 in the state of Arizona (AZ) in the United States (K).

5. Take note of the station ID and key/password and enter it in the mobile application:
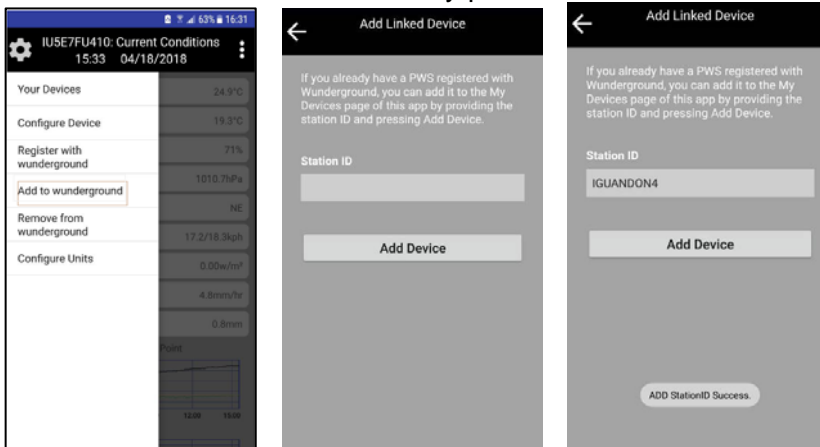
4.2.1 Viewing data on wunderground.com

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:
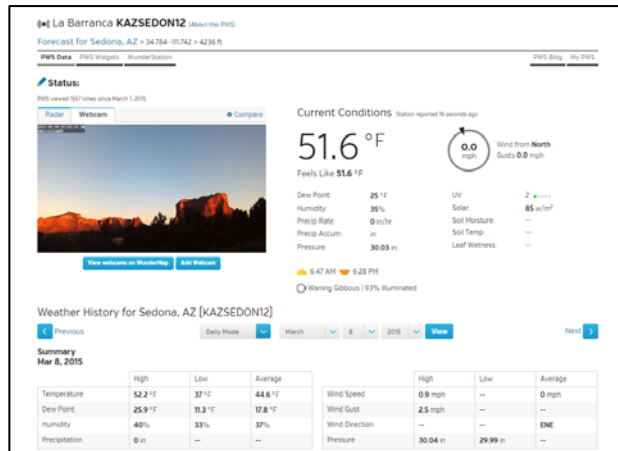
Figure 24: Sample wunderground.com PWS page

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
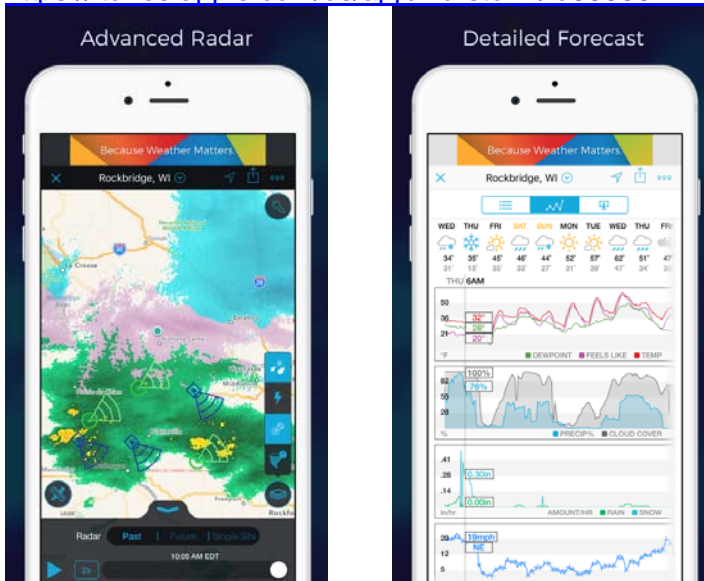
- **Weather Underground: Forecast**: iOS and Android application for forecasts
  https://itunes.apple.com/us/app/weather-underground-forecast/id486154808
  https://play.google.com/store/apps/details?id=com.wunderground.android.weather&hl=en
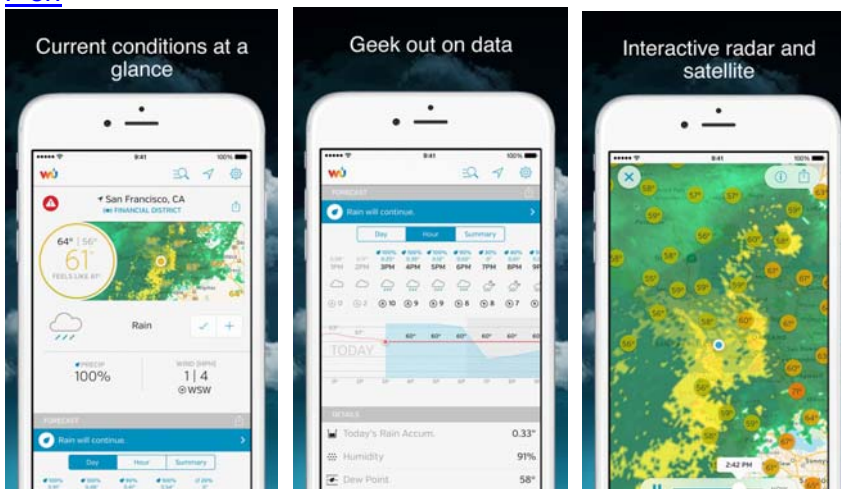
- **PWS Weather Station Monitor**: View weather conditions in your neighborhood, or even right in your own backyard. Connects to wunderground.com

https://itunes.apple.com/us/app/pws-weather-station-monitor/id713705929
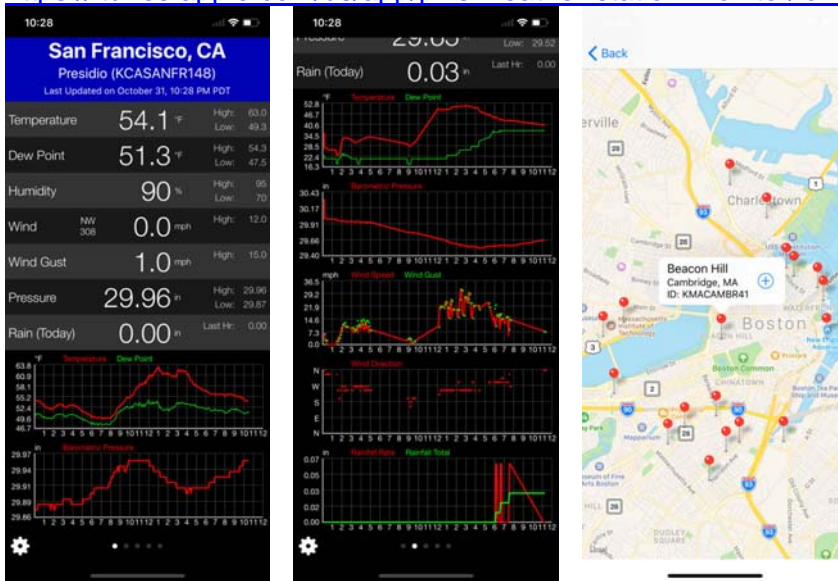
4.3 Registering with and using Weathercloud

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:
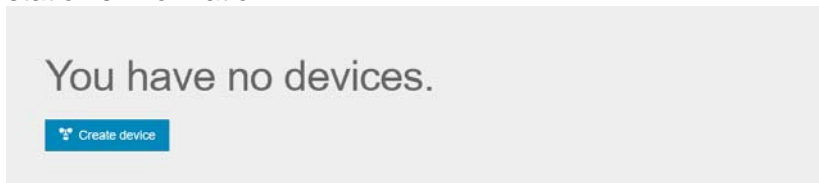
4. After registering your station, take note of the "Weathercloud ID" and "Key" presented to you.
5. Enter these values in the mobile application:
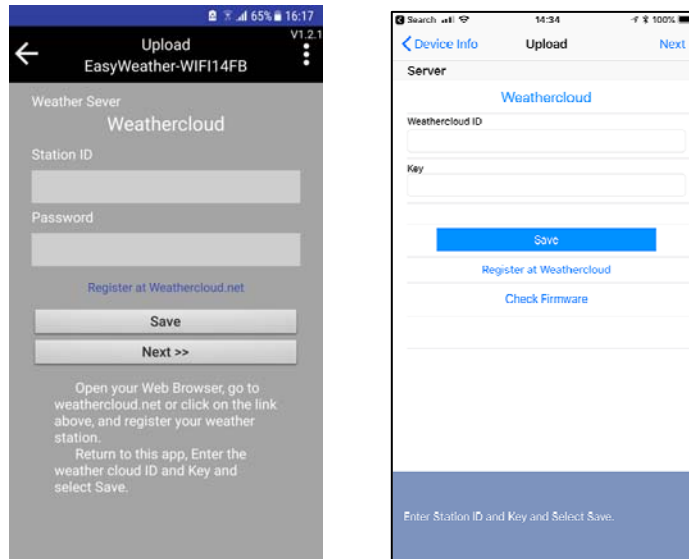
Figure 25: Mobile application – Weathercloud configuration

4.4 Registering with Weather Observations Website (WOW)

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

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

4.4.1   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".
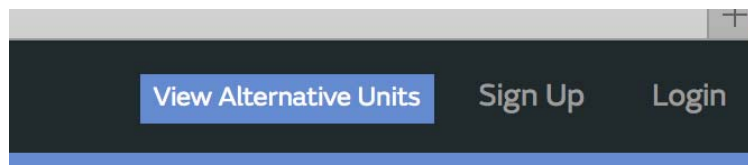
Figure 26: WOW Signup menu

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.
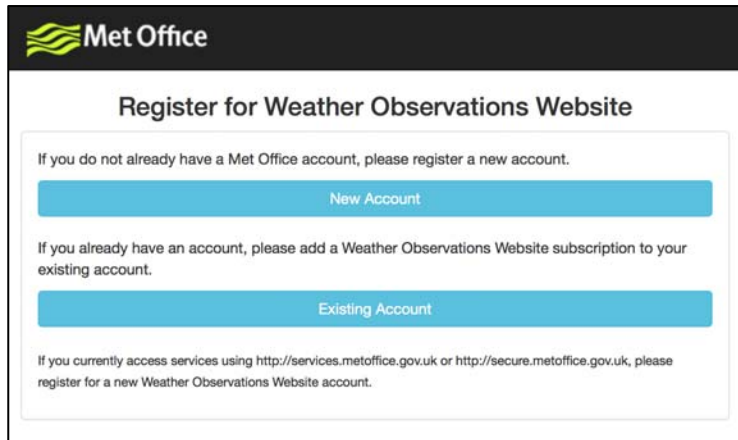
Figure 27: WOW Registration account options

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

Figure 28: WOW New account form

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:
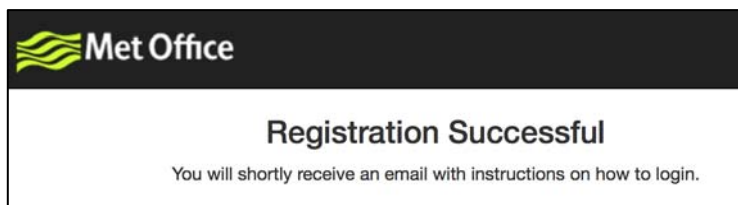
Figure 29: WOW Successful registration

4.4.2   Confirm email with WOW

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

4.4.3   Login with WOW

Follow instructions on the screen and login to the site.

4.4.4   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":
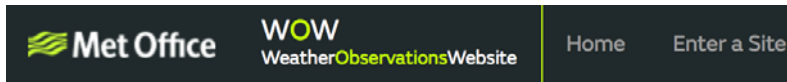
Figure 30: WOW New Site menu

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:
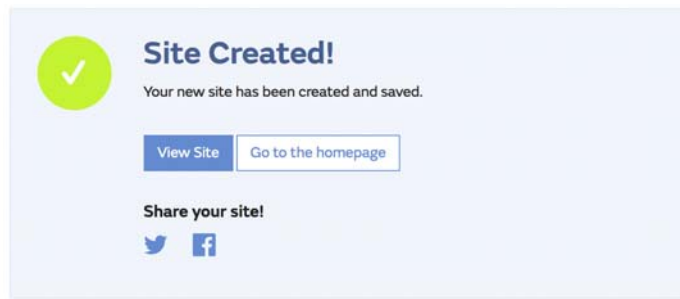
Figure 31: WOW Site Created

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:
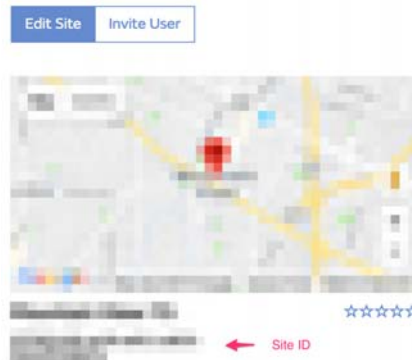
Figure 32: WOW Site ID and Edit Site

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") (Figure 33) and filling out the with a 6-digit number of your choice:

Authentication Key

123456

Figure 33: WOW Authentication Key

You will need both "Site ID" and "Authentication Key" to setup the upload configuration for WOW in the mobile application.

4.4.5 Entering WOW information in the mobile application

In your mobile application, navigate to the "Your Devices" page and tap on the device you want to configure WOW for. You will then be shown the "wunderground.com" configuration. Please ignore and tap "Next" to see the "Weathercloud" configuration. Please press "Next" one more time and you will now be on the screen where you will configure WOW.

On this screen you will fill out "Station ID" with the WOW "Site ID" value, and "Station Key" with the WOW "Authentication Key" you created. Press "Save" to finalize the configuration.
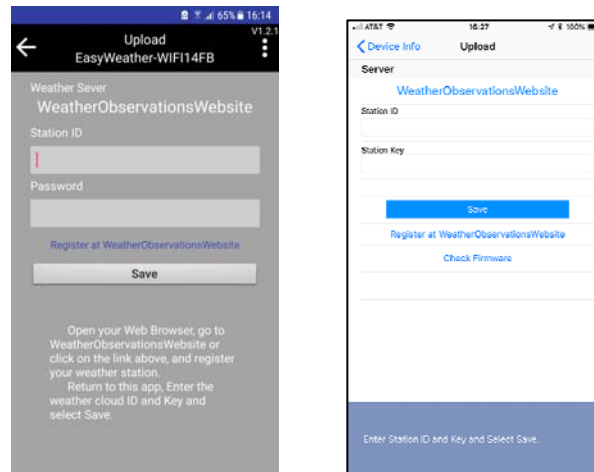
Figure 34: Mobile application – WOW Configuration

If you did everything correctly, data should be starting to upload to your WOW site. You may want to go back to the "Edit" page and (re)configure some of the options so that it shows everything to your liking.

4.5 Mobile application – Check weather data and graph

In the mobile application choose the station from the WU station list and you will be presented with a page listing current conditions for that station.
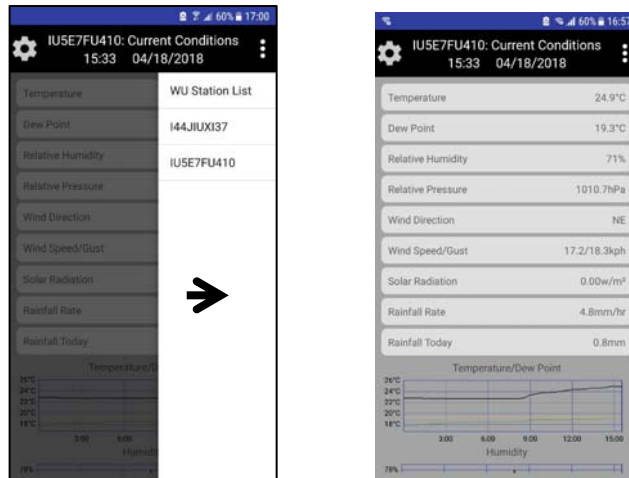
Figure 35: Mobile application – weather and data graph

4.6 Mobile application – Remove monitoring WU ID

If you have previously registered your console for use with wunderground.com and wish to remove that, use the "Remove from wunderground" menu option after tapping on the settings icon, select your console from the list and confirm you wish to remove the station from wunderground.com services. Prior uploaded data will not be lost!
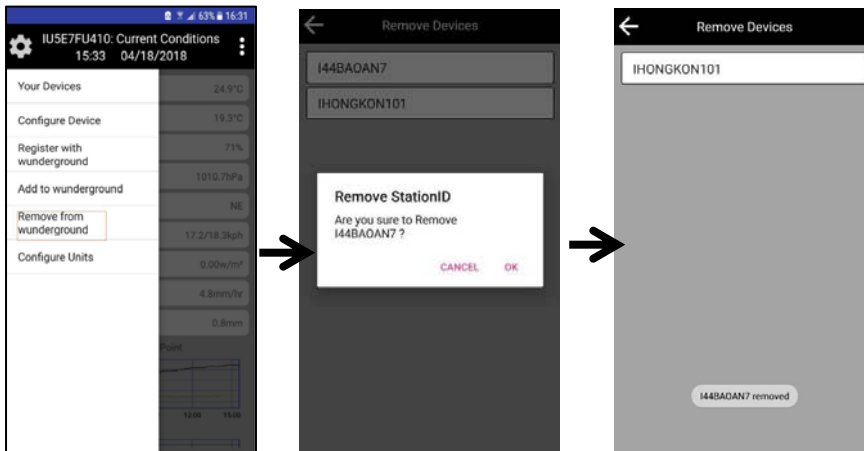
Figure 36: Mobile application – Remove monitoring WU ID

4.7 Mobile application – Set Units

You may want to change the units in which sensor values are reported. To do so, click on the "Configure Units" menu after tapping on the settings icon. Next, tap on the sensor type you wish to change the reporting units for and set the units as desired.
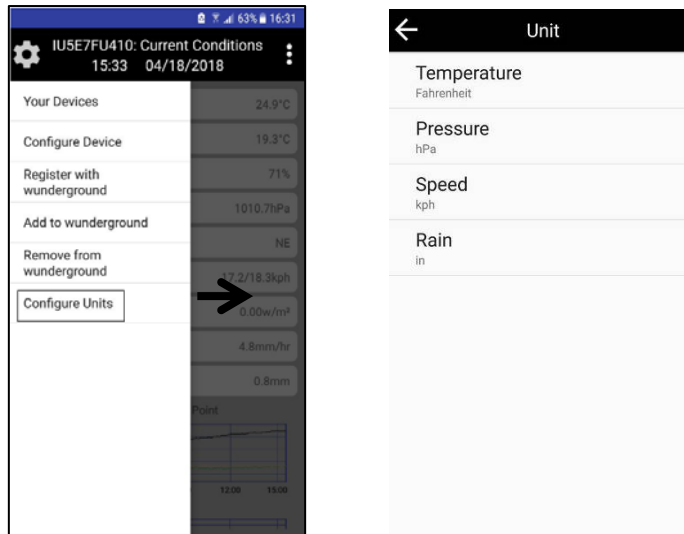
Figure 37: Mobile application – Change units

5. Glossary of Terms

Term	Definition
Accuracy	Accuracy is defined as the ability of a measurement to match the actual value of the quantity being measured.
Dew Point	The dew point is the temperature at which a given parcel of humid air must be cooled, at constant barometric pressure, for water vapor to condense into water. The condensed water is called dew. The dew point is a saturation temperature. The dew point is associated with relative humidity. A high relative humidity indicates that the dew point is closer to the current air temperature. Relative humidity of 100% indicates the dew point is equal to the current temperature and the air is maximally saturated with water. When the dew point remains constant and temperature increases, relative humidity will decrease.
Heat Index	The Heat Index, sometimes referred to as the apparent temperature, is a measure of how hot it really feels when relative humidity is factored with the actual air temperature. To find the Heat Index temperature, look at the Heat Index chart below. As an example, if the air temperature is 96°F and the relative humidity is 65%, the heat index (how hot it feels) is 121°F. IMPORTANT: Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to 15°F. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous. The Heat Index Chart shaded zone above 105°F shows a level that may cause increasingly severe heat disorders with continued exposure or physical activity. Heat Index is not calculated below 80°F.

Term	Definition
	Relative Humidity (%) Heat Index (Apparent Temperature) chart with Air Temperature (°F) rows and Relative Humidity (%) columns, alongside the "With Prolonged Exposure and/or Physical Activity" legend: **Extreme Danger** – Heat stroke or sunstroke highly likely; **Danger** – Sunstroke, muscle cramps, and/or heat exhaustion likely; **Extreme Caution** – Sunstroke, muscle cramps, and/or heat exhaustion possible; **Caution** – Fatigue possible.
Hygrometer	A hygrometer is a device that measures relative humidity. Relative humidity is a term used to describe the amount or percentage of water vapor that exists in air.
Range	Range is defined as the amount or extent a value can be measured.
Resolution	Resolution is defined as the number of significant digits (decimal places) to which a value is being reliably measured.
Thermometer	A thermometer is a device that measures temperature. Most digital thermometers are resistive thermal devices (RTD). RTDs measure changes in temperature as a function of electrical resistance.

Figure 38

6.   Specifications

6.1 Wireless Specifications

- Line of sight wireless sensor array RF transmission (in open air): 330 feet, 100 feet under most conditions
- Line of sight WiFi RF transmission (in open air): 80 feet
- Update Rate: Outdoor Sensor: 48 seconds, Indoor Sensor: 64 seconds
- Sensor Array RF Frequency: 915 MHz
- WiFi Console RF Frequency: 2.4 GHz

6.2 Measurement Specifications

The following table provides the specifications for the measured parameters.

Measurement	Range	Accuracy	Resolution
Indoor Temperature	-14 to 140 °F	± 1.8 °F	0.1 °F
	-10 to 60 °C	± 1 °C	0.1 °C
Outdoor Temperature	-40 to 149 °F (lithium batteries)	± 2 °F	0.1 °F
	-23 to 140 °F (alkaline batteries)		
Outdoor Humidity	10 to 99%	± 5% (only guaranteed between 20 to 90%)	1 %

Figure 39

6.3 Power Requirements

- Base station : 5V DC Adaptor (included)
- Base station: 2 x AAA batteries (not included)
- Outdoor sensor array: 2xAA batteries (not included)
- About 12-24 months for thermometer-hygrometer sensor (use lithium batteries in cold weather climates)

7. Troubleshooting Guide

Problem	Solution
Wireless remote (thermo-hygrometer) not reporting in to console. There are dashes (--.-) on the display console.	If any of the sensor communication is lost, dashes (--.-) will be displayed on the screen. To reacquire the signal, reference Section 3.6. The maximum line of sight communication range is 300 feet and 100 feet under most conditions. Move the sensor closer to the display console. If the sensor is too close (less than 5'), move the sensor away from the display console. Make sure the remote sensor LCD display is working on both the console and the remote sensor. Install a fresh set of batteries in the remote thermo-hygrometer. For cold weather environments, install lithium batteries. Make sure the remote sensor is not transmitting through solid metal (acts as an RF shield), or earth barrier (down a hill). Move the display console around electrical noise generating devices, such as computers, TVs and other wireless transmitters or receivers. Move the remote sensor to a higher location. Move the remote sensor to a closer location.
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.

Problem	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 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 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 make sure the 2.4 GHz band is turned on. 5. The console does not support guest networks.

Figure 40

8. Liability Disclaimer

Please help in the preservation of the environment and return used batteries to an authorized depot. The electrical and electronic wastes contain hazardous substances. Disposal of electronic waste in wild country and/or in unauthorized grounds strongly damages the environment.

Reading the "User manual" is highly recommended. The manufacturer and supplier cannot accept any responsibility for any incorrect readings and any consequences that occur should an inaccurate reading take place.

This product is designed for use in the home only as indication of weather conditions. This product is not to be used for medical purposes or for public safety information.

The specifications of this product may change without prior notice.

This product is not a toy. Keep out of the reach of children.

No part of this manual may be reproduced without written authorization of the manufacturer.

FCC STATEMENT

1. This device complies with Part 15 of the FCC Rules.
   Operation is subject to the following two conditions:
    (1) This device may not cause harmful interference, and
    (2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital, pursuant to Part 15 or the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may casue harmful interference to radio communications, However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

--- Reorient or relocate the receiving antenna.

--- Increase the separation between the equipment and receiver.

--- Connect the equipment into an outlet on a circuit different
   from that to which the receiver is connected.

--- Consult the dealer or an experienced radio/ TV technician for help.