WS-1517 FAQS

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Batteries

- ✓ Half of all warranty issues can be resolved with fresh batteries of the appropriate voltage.
- ✓ We suggest name brand Alkaline batteries for indoor displays such as weather stations.
- ✓ Use batteries dated at least six years in advance of the current year. Batteries dated earlier than six years from now may still work, but may be unstable in performance.
- ✓ Alkaline batteries manufactured this year will have an expiration date 10 years in the future. Battery technology has improved and batteries will maintain voltage longer in storage. However, the environment the batteries reside in for the 10 years can deplete the power.
- ✓ Good name brand batteries make less noise, which reduces the chance of RF (radio frequency) interference from the battery compartment. A minimum voltage of 1.48V for each battery is necessary for proper performance.
- ✓ **Outdoor Transmitter:** Use Alkaline batteries or Lithium for temperatures below 32°F, 0°C.
- ✓ **Weather station:** Use A/C power cord and/or Alkaline batteries. Overpowered or underpowered batteries may cause loss of indoor readings, missing segments, dim display etc.

Weather Station Factory Restart

1. ERASE MEMORY: Hold the SNOOZE and UP buttons together for about 5 seconds until the backlight flashes. Press the SET button to clear the memory. The weather station will start beeping. **Wait for the beeping to stop.**
2. REMOVE POWER: Remove batteries from the Thermo-hygro (outdoor) sensor, Rain sensor, Wind sensor and the A/C cord and batteries from the weather station.
3. WAIT 15 MINUTES. Let all units sit without batteries for 15 minutes.
4. INSTALL BATTERIES INTO SENSORS: Insert the batteries into the Thermo-hygro sensor, Wind sensor and Rain sensor first.
5. **IMPORTANT:** Allow sensors to run for at least 2 minutes.
6. **Note:** It is important that the sensors be *at least* 5 feet from your base during the restart.
7. WEATHER STATION: Return to the weather station and press any button 20 times. Verify that the weather station is completely blank before proceeding. Connect the A/C cord and/or install batteries into weather station.
8. WAIT 15 MINUTES: Do not press any other buttons for AT LEAST 15 MINUTES while the station completes its startup sequence.
9. SET WIND DIRECTION: Set wind direction to North. Manually point the wind direction vane to the North and press the SET opening inside the battery cover of the wind sensor one time only.
10. Follow the program menu to **set language** and **city code,** then any custom settings desired.

Quick Connect

- ✓ Check batteries in the transmitters.
- ✓ **Hold** the DOWN arrow button for 4–5 seconds on the weather station to search for the remote transmitters.

Remote Transmitters

Power requirements

- ✓ 2-AAA batteries power the Thermohygro transmitter
- ✓ 2-AA batteries for the Rain transmitter
- ✓ 2-AA batteries for the Wind transmitter
- ✓ We recommend Alkaline batteries for the transmitters.
- ✓ You may choose to use lithium batteries for temperatures below 32°F (0°C).

Compatible outdoor transmitters

- ✓ TS21 Thermohygro
- ✓ TS805 Wind
- ✓ TS906 Rain
- ✓ The above 433MHz transmitters will read to this weather station.

Dashes shown for outdoor temperature/humidity

- ✓ Dashes means the connection is lost between the weather station and the outdoor transmitter.
- ✓ Batteries often resolve the connection.
- ✓ Distance/Resistance can cause loss of connection between the transmitter and the weather station.
- ✓ Reorientation of the weather station 90 degrees towards the thermohygro transmitter may provide better reception by the antenna.
- ✓ Complete a factory restart.

Inaccurate outdoor temperature/humidity

- ✓ The thermohygro transmitter reads the environment. When the transmitter reads high during the day but not at night it is a mounting problem.
- ✓ **Side-by-side test:** Bring the thermohygro transmitter in the house and place it next to the weather station for 2 hours.
- ✓ Compare indoor and outdoor temperature. The temperatures should be within 4 degrees to be within tolerance. The humidity should be within 10% to be within tolerance.
- ✓ If the transmitter reads correctly when next to the weather station, try a different location outside.
- ✓ Look for heat sources such as sunlight, door or window frames, or reflected heat.

Intermittent outdoor temperature/humidity

- ✓ RF (radio frequency) communication may come and go occasionally. This can be normal in some environments (e.g. moister climates). If transmitter signal is lost, please wait 2-4 hours for the signal to reconnect on its own.
- ✓ Move the remote transmitters to a location closer to the weather station.
- ✓ **Indoor distance test:** Please complete the Restart with transmitters and weather station 5-10 feet apart and inside to establish a strong connection.
- ✓ After 15 minutes if there is a reading in the outdoor temperature area, move the transmitter to another room with one wall between the transmitter and the weather station. Observe to see if the remote readings remain on consistently for 1 hour.
- ✓ If the remote reading remains on while in the house then it is likely a distance/resistance issue.
- ✓ Move the transmitter to different locations outside to find a location where the remote readings will hold.
- ✓ Distance/Resistance can cause loss of transmitter signal.
- ✓ Check Batteries.

Thermohygro transmitter fell, and does not work

- ✓ The fall may not have caused internal damage if there is no physical damage.
- ✓ A thermohygro transmitter that has fallen into a puddle or other standing water or snow may have water damage.

- ✓ Transmitters are water resistant, not waterproof.
- ✓ A fall can shock the transmitter or the batteries in the transmitter.
- ✓ Batteries that have fallen on a hard surface may be damaged and unable to function properly.
- ✓ Complete a Restart with fresh batteries.
- ✓ Use Batteries dated at least six years in advance of the current year. Batteries dated earlier than six years from now may still work, but may be unstable in performance.

Thermohygro transmitter drains batteries quickly

- ✓ Test a new set of Alkaline batteries. Write down the date of installation and the voltage of the batteries.
- ✓ When the batteries fail, please note the date and voltage again. This is helpful in determining the problem.
- ✓ Check the distance and resistance between the transmitter and weather station. Transmitters at the end of the range may work while batteries are fresh but not after they drain a bit.
- ✓ Check for leaking batteries, which may damage the transmitter.

Outdoor temperature/humidity is stuck or OFL

- ✓ Check Batteries. Overpowered or underpowered batteries can cause this reading.
- ✓ Replace outdoor transmitter.

Thermohygro transmitter stops working when hot

Thermohygro transmitters show Dashes or OFL when the temperature reaches a certain degree, but returns to normal readings when the temperature cools down; please check:

- ✓ BATTERIES: At higher temperatures, batteries can overheat causing transmitter failure. Older and weaker batteries are more likely to fail in hot weather. Try a fresh set of batteries to see if the issue is resolved.
- ✓ DISTANCE/RESISTANCE: When the Thermohygro transmitter is at the edge of the distance range and the temperatures are very hot, the batteries can loose strength and the connection may be lost.

Humidity shows OFL but temperature works

- ✓ Complete a restart with fresh batteries.
- ✓ Replace the thermohygro transmitter.

Fahrenheit/Celsius

- ✓ With temperature and humidity icon flashing, hold the SET button to alternate between temperature in Fahrenheit (ºF) or Celsius (ºC).

Temperature alerts

Set Temperature Alarm

1. With temperature and humidity icon flashing, press and release the ALARM/CHART button once selecting the desired alarm limit–-Upper or Lower.
2. **Hold** the ALARM/CHART button until the temperature alarm icon starts flashing.
3. Use the UP or DOWN arrows to select the temperature alarm value. Press and hold either button for fast digits advance.
4. Press the ALARM/CHART button to confirm selection and return to the temperature Alarm selection screen.
   Note: The temperature alarms have a 1°F (0.5ºC) deviation to prevent false alarms due to small temperature fluctuations. Temperature has to fall below (or above) the programmed level(s) to activate the alert.

Disable the Temperature Alarm

1. With temperature and humidity icon flashing, press and release the ALARM/CHART button once to select the high or low temperature alarm.

2. With the alarm icon showing, press and release the UP or DOWN buttons until the alarm reads **OFF**.
3. When the temperature shows with the high or low alarm icon, the alarm is active.
4. When the temperature shows without the alarm icon, the temperature alarm is off.

 High temperature alarm active  Low temperature alarm active  High and low

Dew Point temperature

- ✓ Dew point is the saturation point of the air, or the temperature to which the air has to cool in order to create condensation (100% humidity). Dew Point Temperature reflects the point at which condensation and evaporation are equal. Dew Point Temperature is the accurate measure of the quantity of water vapor in the air.
- ✓ Dew Point Temperature does not change with air temperature changes. It only changes with moisture content changes with barometric pressure stable.
- ✓ **Note:** Dew Point is lower than the actual temperature.
- ✓ **Note:** A Frost Point occurs when the Dew Point Temperature is below freezing.

MIN/MAX temperature readings

- ✓ **View:** With the temperature and humidity icon flashing, press the MEMORY button to recall a current temperature and humidity, minimum temperature and humidity or maximum temperature and humidity at the remote location.
- ✓ **Reset:** Hold the MEMORY button for five seconds to clear all MIN/MAX readings.

Wind Transmitter

- ✓ The wind sensor reads directly to the weather station. It is not dependent on the thermohygro sensor for signal reception.
- ✓ 2-AA batteries power the wind sensor.

Cups spinning slow or not spinning

- ✓ Check for debris or ice in cups.
- ✓ Be sure cups are below mast holder.
- ✓ Check mounting location. Look for obstructions that prevent the wind from reaching the transmitter.
- ✓ The mast should not be more than 1¼ inch thick.
- ✓ The wind transmitter needs to be 4 to 6ft above the highest point on the roof to read accurately.
- ✓ A 50-foot clearance in all directions is best.
- ✓ Push up firmly on the center of the cups to reseat them. Occasionally they drop a bit.
- ✓ Cups are replaceable.

Replace wind cups and set wind direction

Replace wind cups

- ✓ The cups attach with a single screw through the side of the wind cups.
- ✓ Loosen the screw.
- ✓ Gently and firmly pull the cups straight down to remove.
- ✓ Notice the metal stem where the cups attach.
- ✓ There is a flat spot on one side of the stem. It is important that the screw be aligned with the flat spot to prevent them from dropping in high winds.
- ✓ Install replacement wind cups aligning the screw with the flat spot on the stem.
- ✓ Tighten the screw.
- ✓ Test to assure the wind cups are securely mounted on the anemometer shaft and spin freely
- ✓ **Note:** If wind speed shows 0.00 but direction works, check that the wind cups did not drop.

Set Wind Direction

- ✓ Check that all the sensor readings are received by the weather station.
- ✓ Remove the battery cover (not the batteries) from the wind sensor.
- ✓ Manually point the wind direction vane to the North (use a compass or map if necessary).

- ✓ Press the SET opening located inside battery compartment with a paper clip or similar tool. This will set the local wind direction to North.
- ✓ **Only press set once.** Continued presses of the SET opening, toggles the wind direction between the factory defaults preset or manual set direction.
  Note: Repeat this procedure every time when changing the batteries.
- ✓ Watch for the next update on the weather station to ensure the direction changed to North.

Wind direction is working wind speed is 0.00

- ✓ Check that the wind cups attach to the transmitter. Occasionally they can come off.
- ✓ Check that the cups seat properly by pushing up in the center of the cups.
- ✓ Check that the cups spin freely.

Wind reading is intermittent or shows dashes

- ✓ RF (radio frequency) interference is normal; the occasional outage is possible.
- ✓ Check for sources of RF (radio frequency) interference such as ham radios or electric transformers nearby.
- ✓ Move the weather station away from cordless phones, wireless routers, etc.
- ✓ Check the environment for unusual moist/humid conditions (moisture reduces RF (radio frequency) signal in electronics).
- ✓ Distance/Resistance can cause loss of transmitter signal.
- ✓ Relocate the Wind transmitter closer to the weather station.
- ✓ Mounting on a metal or white PVC pole may cause RF interference or static.
- ✓ Please note if there are certain times of the day or night that the unit lose signal. Details are helpful in resolving the problem.
- ✓ Check that your batteries are fresh.
- ✓ Complete a factory restart.

Wind speed is inaccurate

- ✓ Check the unit of measure (MPH, KM/H or M/S).
- ✓ Check to see if the weather station receives the same repetitive wind speed recording from the transmitter multiple times.
- ✓ Confirm the direction is working correctly.
- ✓ Mounting on a metal or white PVC pole may cause RF interference or static and inaccurate readings.
- ✓ Check that the cups turn freely.
- ✓ Check for insects or debris preventing free movement.
- ✓ Be sure the cups are below the mast holder.
- ✓ Check that the cups have not dropped. Push up firmly in the center of the cups to seat properly.
- ✓ Check for obstructions.
- ✓ Check mounting. In most cases, the wind sensor needs to be 6 feet or more above the highest point on the roof in order to clear nearby obstructions and read accurately. A 50 foot clearance in all directions is best.
- ✓ It is helpful to send pictures of the sensor mounting, if you need to contact customer support.
- ✓ Check that your batteries are fresh.

Wind reading is OFL

- ✓ Check batteries. This is often a power issue.

Understanding wind readings

- ✓ **Wind Speed** is “sampled” every 11 seconds. The current wind speed viewed on the display is the **average** wind speed over the past 10 minutes.
- ✓ **Wind Gust** is “sampled” every 11 seconds. These readings are sent to the weather station every 33 seconds as current wind gust. You may find the wind gust helpful for readings updated more often than the 10-minute average wind speed.
- ✓ **Wind Chill** is a combination of wind speed and the outdoor temperature recorded by the wind sensor.

Wind area on the weather station is blank (no dashes or numbers)

- ✓ Check that other areas of the weather station read properly.
- ✓ Check batteries in the weather station.
- ✓ The weather station and wind sensor need testing.

Wind direction shows dashes

- ✓ If the speed is working, then the wind transmitter is bad.

Wind direction is incorrect

- ✓ Reset Wind Direction.
- ✓ Remove the battery cover (not the batteries) from the wind sensor.
- ✓ Manually point the wind direction vane to the North (use a compass or map if necessary).
- ✓ Press the SET opening located inside battery compartment with a paper clip or similar tool. This will set the local wind direction to North.
- ✓ **Only press set once.** Continued presses of the SET opening, toggles the wind direction between the factory defaults preset or manual set direction.
  Note: Repeat this procedure every time when changing the batteries.
- ✓ Watch for the next update on the weather station to ensure the direction changed to North.

Wind transmitter is frozen

- ✓ Freezing rain and wet snow can clog the wind transmitter and prevent it from reading speed or temperature.
- ✓ Bring the transmitter in the house for 2-3 days. The transmitter will need to thaw out and dry out for prevent refreezing.

Wind alerts

- ✓ The weather station provides the option to set **Wind Speed Hi alert** and **Wind Gust Hi alert**.
- ✓ **To set alerts:**
  1. With the wind icon flashing, press ALARM/CHART button to select the desired alarm.
  2. **Hold** the ALARM/CHART button until the wind alert and corresponding icon flash.
  3. Set the alert using UP or DOWN arrow button.
  4. Press and hold either button for fast digits advance.
  5. Press ALARM/CHART button to confirm your selection and return to the wind alert selection screen.
- ✓ **To disable alerts:**
  1. Press the ALARM/CHART button to view the wind alert.
  2. Press the UP or DOWN arrow button until the wind alert reads **OFF.**

Note: The wind speed alert is set at 5 mph default and the wind gust alert is set to 7 mph default to prevent false alerts from small fluctuations.

Wind MIN/MAX

- ✓ The weather station records the maximum wind speed and wind gusts collected during the day. Alerts for wind speed and wind gust are programmable.
- ✓ **View:** With the wind icon flashing, press and release the MEMORY button to view:
  - Current average wind speed
  - Daily maximum wind speed
  - Gust speed
  - Daily maximum gust speed
- ✓ **Reset:** With the wind icon flashing, **hold** the MEMORY button to reset all wind statistics.

Wind Chill only reads in Fahrenheit

The wind chill will only read in Fahrenheit. The outdoor and indoor temperatures can be switched to Celsius in the Temperature section.

Wireless Rain Transmitter

How to view rain on the weather station

- ✓ **View:** With the rain icon flashing, press either the SET or the MEMORY button to recall a rain statistics for the past hour, past 24 hours, yesterday, past week or past month.
  Note: Last Hour rainfall value displays as a rate of rain in either "inch/hr." or "mm/hr."

Reset rain

- ✓ With the rain icon flashing, press and hold the MEMORY button to reset **all** rainfall statistics.

Rain readings

For all measurements, it is important time and date are set correctly on your weather station.

- ✓ 1-HOUR RAIN: The 1-hour rain reflects rain that has fallen from current time and back 1-hour. The hour is not a fixed clock time measurement. It is literally an ongoing "last 60 minutes" timer.
- ✓ 24-HOUR RAIN: The 24-hour rain reflects the rain that has fallen from current time and back 24-hours. This is not a midnight-to-midnight measurement. The day is not a fixed clock time measurement. It is literally an ongoing "last 24 hours" timer.
- ✓ YESTERDAY: This reflects the rain that has fallen from midnight to 23:59. This is a midnight-to-midnight measurement. The day is a fixed clock time measurement.
- ✓ WEEKLY RAIN: The amount of rainfall from the previous week. The week is midnight Sunday to midnight Saturday.
- ✓ MONTHLY RAIN: Monthly rain reflects the previous month's rain and will update 12AM the first day of the month.

Rain reads 0.00

- ✓ Check that the pin the rocker tips on is all the way to the back and that the rocker tips freely.
- ✓ Check the funnel and the inside of the rain transmitter for insect nests or debris that may cause loss of rocker motion.
- ✓ Check for proper battery installation.
- ✓ Check the battery cover is on firmly.
- ✓ Mount the rain transmitter level and check that the mounting screws are not too tight (most common issue).
- ✓ Use the eraser end of a pencil to manually tip the rocker of the rain transmitter 10 times (five each way).
- ✓ Wait at least 2 minutes for all the rain to collect.
- ✓ Check the Total Rain on the weather station for a reading.
- ✓ Complete a factory restart.

Rain reads dashes

- ✓ The weather station and rain transmitter are not connected.
- ✓ Complete a factory restart.
- ✓ Check that the Wind and Temperature are still working. If Wind and Temperature are not working then it may be a weather station issue.
- ✓ Distance/Resistance can cause loss of transmitter signal.
- ✓ Check batteries in the rain transmitter and the weather station. This is our primary warranty issue.
- ✓ Orient the weather station 90 degrees towards the rain transmitter for better reception.

Rain reads OFL

- ✓ OFL indicates that the weather station is receiving a signal from the transmitter.
- ✓ The weather station will read OFL if it has counted more inches of rain (from testing, etc.) then it is designed to read. Last week/last month rain 0 to 787.3 (0 to 9999 mm) 1-hour, 24-hour, yesterday rain 0 to 78.73" (0 to 999.9 mm). Check for sources of interference such as other wireless rain transmitters, Ham radios, or large electrical transformers. This may cause rain to add up when there is no rain.
- ✓ Check batteries in the rain transmitter and the weather station. This is our primary warranty issue.

Rain transmitter drains batteries quickly

- ✓ If batteries are good when first inserted, batteries should last one year or more. If the batteries in the transmitter are not lasting that long, please try these tips:
  - Test a new set of Alkaline batteries. Write down the date of installation and the voltage of the batteries.
  - When the batteries fail, please note the date and voltage again. This is helpful in determining the problem.
- ✓ Complete the restart and confirm that everything is working after a battery change.
- ✓ Battery leakage may cause a transmitter to drain batteries quickly.

Rain area on the weather station shows blank (no numbers or dashes)

- ✓ Check that other areas of the weather station read properly. There may be a problem with the weather station.

Rain reads low

- ✓ Low rain readings indicate the rain transmitter and weather station are connected.
- ✓ Check that the pin the rocker tips on is all the way to the back and that the rocker tips freely.
- ✓ Check the funnel and the inside of the rain transmitter for insect nests or debris that may cause loss of rocker motion.
- ✓ Check for proper battery installation.
- ✓ Check the battery cover is on firmly.
- ✓ Be sure to mount the rain transmitter level and that the mounting screws are not too tight (most common issue).
- ✓ Complete a Manual Tip Test and a Water Tip Test and compare them:
  - **Manual Tip test:** Write down the Total Rain reading or reset the Rain Total to 0.00. Use the eraser end of a pencil to manually tip the rocker of the rain transmitter 10 times (five each way). Wait at least 2 minutes for all the rain to collect.
  - **Water Tip Test:** Write down the Total Rain reading or reset the Rain Total to 0.00. With Rain Transmitter mounted, slowly pour water into the funnel to tip the rocker of the rain transmitter 10 times (five each way). Wait at least 2 minutes for all the rain to collect.
- ✓ Compare these tests. If they are the same, then the rain is reading correctly. If the rain readings are different, repeat the test 3 times to avoid human error. Then look for causes such as mounting too tight or debris clogging the funnel.
- ✓ Check batteries in the rain transmitter and the weather station. This is our primary warranty issue.

Rain reads high

- ✓ Check for sources of RF (radio frequency) interference such as ham radios, electric transformers, or other rain transmitters nearby.
- ✓ Keep the weather station six feet from cordless phones or wireless routers etc.
- ✓ Complete a Manual Tip Test and a Water Tip Test and compare them:
  - **Manual Tip test:** Write down the Total Rain reading or reset the Rain Total to 0.00. Use the eraser end of a pencil to manually tip the rocker of the rain transmitter 10 times (five each way). Wait at least 2 minutes for all the rain to collect.

- **Water Tip Test:** Write down the Total Rain reading or reset the Rain Total to 0.00. With Rain Transmitter mounted, slowly pour water into the funnel to tip the rocker of the rain transmitter 10 times (five each way). Wait at least 2 minutes for all the rain to collect.

✓ Compare these tests. If they still read high, then contact support.

Rain alerts

Set Daily Rainfall Alert

✓ With the rain icon flashing, press ALARM/CHART button to display the rainfall alert.
✓ **Hold** ALARM/CHART button until the rainfall alert ALARM HI will flash.
✓ Set the desired value for the rainfall alert by using UP or DOWN arrow button.
✓ Press and hold either button for fast digits advance.

Alert Off

✓ With the rain icon flashing, press the ALARM/CHART button to display either the current rainfall statistics or the daily rainfall alert with ALARM HI displayed.
✓ Press the UP or DOWN arrow button to enable or disable it.
✓ If the alert is disabled, the OFF will be displayed.
✓ Press ALARM/CHART button to confirm selection and the weather station will return to the rainfall alert display.

Winter storage for rain transmitter

✓ All our rain transmitters can handle the cold temperatures. We leave them out all year long. However, if you prefer to store the rain transmitter for the winter, remember to remove batteries when storing to prevent leakage.
✓ In the spring, take the rain transmitter out of storage and do a complete restart.
✓ When the rain transmitter is outside all winter and is snow covered, you may see a rain count when the snow begins to melt and run into the rain transmitter. This will not be an accurate measurement for snow.

Mounting/Positioning outdoor transmitter

✓ First, set up everything in the house to be sure it works before mounting the transmitters outside.
✓ For best RF (radio frequency) signal, mount all transmitters at least 6 feet in the air.
✓ The thermohygro transmitter sends directly to the weather station.
✓ When considering the distance from the weather station (100 feet open air), cut that distance in half for each wall, window, tree, bush or other obstruction in the signal path.
✓ Material such as stucco or metal will absorb a wireless signal.
✓ Windows can reflect the signal.
✓ Ideally, the transmitter should be at least 6 feet off the ground (higher is fine) for best signal transmission.
✓ Place the thermohygro transmitter in a well-shaded area protected from direct sun. The transmitter will read high if exposed to the sun.
✓ A good location is under the eaves on the North side of the house.
✓ A small roof or well-vented box is useful if you do not have an overhang.
✓ The thermohygro transmitter can withstand rain, snow and temperature extremes.
✓ Standing rain and snow may soak into the transmitter and cause failure.
✓ If the transmitter gets too wet, it will not read accurate humidity.
✓ Ensure the thermohygro transmitter will not be exposed in a downpour.
✓ Light incidental exposure to water typically will not harm the transmitter.

Mounting/Positioning wind transmitter

✓ For most accurate wind readings, mount the wind sensor as the highest item in the area with a 50 foot clearance in all directions (avoid tall trees, buildings or other obstructions that may block or reflect the wind).
✓ Cup should be on the bottom.

- ✓ Use four screws to mount the wind sensor vertically on a piece of wood about 3 inches wide.
- ✓ Be sure the metal mast holder faces north so the direction will read correctly.
- ✓ **Roof Mounting:** In most cases, at least 6 feet above the peak of the roof (or more) is required for accurate readings (Avoid tall trees or other obstructions that may block or reflect the wind).
- ✓ **Ground Mounting:** Place at least 6 feet up on a pole in an open area—higher is better. The wind sensor should be the highest item in the immediate area. Mount the wind sensor away from all obstacles that will block wind activity, such as trees and houses.

Mounting/Positioning rain transmitter

- ✓ Make sure that the rain sensor is level. Inside there is a built-in level to assist in mounting. Make sure the bubble is centered in the level.
- ✓ Place the protective screen over the top to protect the rain sensor from the debris.
- ✓ Where practical, mount the rain sensor in place with wood screws (not included).
- ✓ Make sure that the rain sensor is in open area where precipitation falls directly into the sensor's bucket, ideally 3-6 feet above the ground.
  Note: The rain sensor will need debris removed on a regular basis. Mount in an accessible area.
- ✓ Mount the rain sensor in an open area away from the walls, fences, trees and other coverings that may reduce the amount of rain falling into the bucket. Additionally, trees and rooftops may be sources of pollen and debris that may clog the rain sensor.
- ✓ To avoid the rain shadow effects, place the rain sensor horizontally, at a distance about two to four times the height of any nearby obstruction.
- ✓ Be aware of other wireless rain gauges in the area that may cause interference.
- ✓ The rain gauge is self-emptying and can be left out all year or stored in the winter. If stored for the winter, remove the batteries to avoid leakage.

Position weather station

- ✓ Make sure that the weather station is locating within the operating range of all remote sensors.
- ✓ Mount the remote sensors within the line of sight of the weather station.
- ✓ Trees, metal structures and electronic appliances may affect transmission range.
- ✓ Test reception before permanently mounting all the remote sensors.
- ✓ Mount near an exterior wall with the front or back facing toward Ft. Collins, Colorado for best WWVB reception.
- ✓ Do not place weather station in direct sunlight or on surfaces emitting and radiating heat, such as heating ducts or air conditioners.
- ✓ Avoid interference from the wireless devices (such as cordless phones, radio headsets, baby listening devices, etc.) and electronic appliances. Place the weather station six feet or more from these devices.

Distance/Resistance/Interference

Distance:
- ✓ The maximum transmitting range in **open air** is over 100 feet (30 meters) between the remote transmitters and the weather station.
- ✓ Consider what is in the signal path between the weather station and the transmitters.
- ✓ Consider the distance the weather station is from other electronics in the home.

Resistance:
- ✓ Obstacles such as walls, windows, stucco, concrete and large metal objects can reduce the range.
- ✓ When considering the distance between the transmitter and the weather station (100 feet, 30 meters open air), cut that distance in half for each wall, window, tree, bush or other obstruction in the signal path.
- ✓ Closer is better.
- ✓ Do not mount the transmitter on a metal fence. This significantly reduces the effective range.

Interference:
- ✓ Consider items in the signal path between the transmitter and the weather station.
- ✓ Simple relocation of the transmitter or the weather station may correct an interference issue.

- ✓ Windows can reflect the radio signal.
- ✓ Metal will absorb the RF (radio frequency) signal.
- ✓ Stucco held to the wall by a metal mesh will cause interference.
- ✓ Transmitting antennas from ham radios, emergency dispatch centers, airports, military bases, etc. may cause interference.
- ✓ Electrical wires, utilities, cables, etc. may create interference if too close.
- ✓ Vegetation is full of moisture and reduces signal.
- ✓ Dirt: Receiving a signal through a hill is difficult.

Weather Station

12-Hour or 24-Hour time format

- ✓ Time display: 12-hour or 24-hour format.
- ✓ Default is 12-hour time.
- ✓ Use the Program Menu to switch time formats.

Power requirements

- ✓ 7.5-volt A/C power cord is recommended.
- ✓ 4-AA Alkaline batteries may power the weather station.

Manually set time: Program Menu

Press the UP or DOWN arrow button until the **clock and alarm icon** flashes. The SET button will move through the program menu. The UP or DOWN arrow button will change a value.

1. Hold the SET button until the day of week language abbreviation **ENG** will flash. Press the UP or DOWN arrow button to select the desired language for day of the week in English (ENG), German (GER), French (FRE), Italian (ITA), Spanish (SPA) or Dutch (DUT).
2. Press the SET button to confirm and move to select the city code for your time zone.
3. City Code **LAX** (Los Angeles) will flash. Use the UP and DOWN button to select a city code in your **time zone**. Refer to table below for a list of available cities.
4. Press the SET button to confirm the city selection. The year will flash 2005.
5. Press the UP or DOWN button to select the correct **year.**
6. Press the SET button to confirm year selection. The month will flash.
7. Press the UP or DOWN button to select the correct **month.**
8. Press the SET button to confirm selection. The numeric date will flash.
9. Press the UP or DOWN button to select the correct **date.**
10. Press the SET button to confirm selection. M/D or D/M will flash.
11. Press the UP or DOWN button to select the correct order of month & year. (**M…D**)
12. Press the SET button to confirm selection. 12H will flash.
13. Press the UP or DOWN button to select either **12 hour** (AM/PM) or **24 hour** (24:00) time format
14. Press the SET button to confirm selection. The Hour will flash.
15. Press the UP or DOWN button to select the correct **hour.**
16. Press the SET button to confirm selection. The minutes will flash.
17. Press the UP or DOWN button to select the correct **minutes.**
18. Press the SET button to confirm selection and to complete the initial programming for your weather station.
19. After programming is completed, the weather station will show the default clock and alarm window.

Note: If you do not complete this sequence, your entries will be lost.
Note: Press and hold **SET** anytime during the setup to return to normal clock and alarm window and all previous settings will be cancelled.

Change display

Press and release the SET button to change the display of the weather station (when the clock and alarm icon is flashing).

These are options to display:

- ✓ Time and Weekday
- ✓ Time and City Code

- ✓ Time and Seconds
- ✓ Month/Day/Year or Day/ Month/ Year
- ✓ Current UTC (Universal Coordinated Time)

Set time alarm

You can choose a time alarm that goes off at the same time every day M-F (weekly alarm), or a single event (single alarm) time alarm. The snooze feature is programmable for up to 15 minutes and works for the same duration on either alarm.

1. With the clock and alarm icon flashing, press the ALARM/CHART button to select the desired alarm.
2. **Hold** the ALARM/CHART button and the **hour** will flash.
3. Set the alarm hour using UP or DOWN arrow button. Press and hold either arrow button for quick digit advance.
4. Press the ALARM/CHART button to confirm selection then the **minutes** will flash.
5. Set the alarm minutes using UP or DOWN arrow button. Press and hold either arrow button for quick digit advance.
6. Press the ALARM/CHART button to confirm selection. Next the **snooze interval** will flash.
7. Set a Snooze interval using UP or DOWN arrow button. Press and hold either arrow button for quick digit advance.
   Note: Both alarms share same snooze time duration
8. Press the ALARM/CHART button to confirm your selection.
9. When programming is completed, the weather station will return to the alarm selection screen.

Activate/Deactivate time alarm

1. Press the ALARM/CHART button to display the **weekday alarm** or **single day alarm** time.
2. If these alarms are not set, the abbreviation **OFF** will be displayed.
3. To enable or disable any of these alarms, press the UP or DOWN button arrow button.
4. Press the ALARM/CHART button to confirm your setting. The alarm symbol will show when that alarm is active.

Note: Press the SET button anytime during alarm programming mode to return to the default clock display.

Snooze

- ✓ When either alarm sounds, press the LIGHT/SNOOZE button to activate the snooze feature for the time interval set.

Note: The alarm will automatically “snooze” if no buttons are pressed after the alarm sounds for 2 minutes. This will occur three times only.

Pressure inaccurate

- ✓ Check the unit of measure is correct. InHg (inches of Mercury) is common in the USA.
- ✓ **Local Pressure** reflects pressure changes at your **specific location (house)**. Program the local altitude/elevation according to GPS readings, internet, etc.
- ✓ **Sea Level Pressure** reflects pressure changes in your surrounding metro area. The **sea level** barometric pressure value can be adjusted according to the local weather reporting station (sources such as local TV, radio stations, Internet, etc.).
- ✓ Sea Level Pressure and Altitude are interdependent.
- ✓ Adjust altitude and the weather station will calculate sea level pressure.
  - Adjust sea level pressure, and the weather station will automatically calculate altitude.
  - You can only adjust one of the two–either sea level barometric pressure or altitude.
  - The default settings are InHg (Inches of Mercury), and 33 feet.

Change or set altitude (local pressure)

1. Press the UP or DOWN arrow button until the Pressure icon flashes.
2. Press the SET button until the local altitude value shows.
3. **Hold** the MEMORY button until the **altitude unit** flashes, feet or meters.
4. Press the UP or DOWN button arrow buttons to set altitude in feet or meters
5. Press MEMORY button once to confirm your selection
6. **Hold** the SET button until the **altitude digits** flashes.
7. Set the altitude value with the UP or DOWN arrow buttons.
8. Hold the UP or DOWN arrow button for faster digits advancement.
9. Press the SET button to confirm your selection.

Change or set Sea Level pressure

1. Press the UP or DOWN arrow button until the Pressure icon flashes.
2. Press the SET button until the local pressure with the word “SEA LEVEL” shows.
3. **Hold** the MEMORY button until the **pressure unit** flashes, (InHg, mmHg or hPa/mBar).
4. Set the pressure units with the UP or DOWN arrow buttons
5. Press the MEMORY button to confirm your selection
6. **Hold** the SET button until the **pressure digits** flash.
7. Set the sea level pressure using the UP or DOWN buttons to adjust the pressure value.
8. Hold the UP or DOWN arrow buttons for faster digits advancement
9. Press the SET button to confirm your selection.

Sea Level pressure history

1. From any mode, press the HISTORY button.
2. When the Sea Level Pressure shows, press and release the HISTORY button repeatedly to view the sea level pressure history for the past 24 hours, in one-hour intervals.
3. If no buttons are pressed for 5 seconds, the weather station will automatically exit the history mode and return to the Pressure and Weather Forecast mode.

Bar Charts: pressure, temperature or humidity

- ✓ The pressure bar graph shows barometric pressure variations over the past 24 hours. This is very useful for understanding the Barometric trends used in weather forecasting. Each bar icon represents 0.06 InHg.
- ✓ Alternatively, the bar chart can display 24-hour trend data for sea level pressure, outdoor temperature or outdoor humidity (channel 1 only).
    1. Press the UP or DOWN arrow button until the Pressure icon flashes.
    2. **Hold** the ALARM/CHART button to change the bar chart **title** (right bottom corner).
    3. Alternate between Pressure, Outdoor Temperature (thermometer icon) and Relative Humidity (dew drop icon).
    4. The single bar on the far right indicates rising or falling trend.

All the bar charts read from left to right.

- ✓ The left is the oldest history data.
- ✓ Reading from left to right indicates the rise and fall of the reading.
- ✓ The bar chart will constantly scroll to avoid LCD burnout.

Forecast Icons inaccurate

- ✓ The weather forecasting feature is estimated to be 70% accurate. The weather forecast is based solely upon the change of air pressure over time.
- ✓ The icons are predicting 12-24 hours in the future, not current conditions. It may be sunny out your window, but the pressure is falling so the forecast station will show clouds with rain icon.

- ✓ The SUNNY icon indicates clear weather, even when displayed during the night-time.The icons displayed forecast the weather in *terms of getting better or worse, and not necessarily sunny or rainy* as each icon indicates.

Note: After initial set-up, disregards icons for weather forecasts for the next 48-60 hours. This will allow sufficient time for the weather station to collect air pressure data at a constant altitude and result in a more accurate forecast.

Moon phase

- ✓ The moon phase is based on the year, month and date, set manually or set by the WWVB signal.
- ✓ **New Moon** occurs when the moon is between the earth and sun, so the illuminated portion of the moon is on the backside facing the sun and we cannot see it. After a new moon, the illuminated (visible) portion will increase or wax until the full moon occurs.
- ✓ **Full Moon** occurs when the earth, moon and sun are in approximate alignment with the moon and the sun on opposite sides of the earth. The illuminated portion of the moon faces the earth, giving us complete visibility of one side of the entire moon. After a full moon, the illuminated portion will decrease or wane until the new moon occurs.
- ✓ **First Quarter** and **Last Quarter** moons occur when the moon is at a 90-degree angle to the earth and sun. We see half of the moon illuminated and half is in shadow.
- ✓ **Waxing** means growing or expanding illumination, which occurs after a new moon.
- ✓ **Waning** means decreasing illumination and occurs after a full moon.
- ✓ **Crescent** refers to the moon being less than half-illuminated. Crescents can be waning or waxing.
- ✓ **Gibbous** describes a moon phase when more than half is illuminated. Gibbous can be waxing or waning.

Moon phase history

- ✓ The weather station indicates the current moon phase. You can view moon phase history and forecast for up to 39 days in one-day increments.
- ✓ The history will show in the History Window with a + or – number indicating the days of change.
- ✓ The moon icon itself will also change to match the history reading.

1. Select the Pressure and Weather Forecast display.
2. Press and release the MEMORY button, and **+ 0** days will flash.
3. Press the UP or DOWN arrow buttons selecting from today's date a future (+) or past (-) days and the corresponding moon phase will be displayed. Hold either arrow button for a quick advance.
4. Press the MEMORY button to exit

Backlight

- ✓ The weather station includes a light sensor that detects low light conditions and will turn the backlight on automatically (A/C power cord use required).
  - When operating with the optional A/C power cord, the weather station backlight can be turned ON, OFF or automatic (depending on light conditions).
  - AUTO: The backlight will be off in when there is adequate light, and will come on automatically in low light conditions.
  - ON: The backlight will be on constantly when using A/C power.
  - OFF: The backlight will remain off unless the LIGHT button is pressed.

  Note: For continuous backlight control, the A/C adaptor (included) must be plugged in.
- ✓ Adjust backlight sensor sensitivity to high or low using the switch, located on the back of the weather station.
- ✓ When operating on battery power alone, press the LIGHT button to activate the backlight for three seconds.

Comfort statement

The weather station will calculate the indoor comfort level based on indoor temperature and humidity.

- ✓ COMFORT: Indicates the indoor temperature and humidity are in a comfortable range.

- ✓ WET: Indicates the indoor humidity is high.
- ✓ DRY: Indicates the indoor humidity is low.

Weather station has missing segments

- ✓ This is generally a power related issue.
- ✓ Batteries may be overpowered or underpowered. Remove batteries and A/C cord from weather station.
- ✓ Press any button 20 times. Leave the weather station unpowered for 1-2 hours.
- ✓ Insert the A/C power cord into the outlet first then into the weather station.
- ✓ Alternatively, install fresh Alkaline batteries with correct polarity.

Weather station is dim

Battery Operation:

- ✓ Most weather stations have a gray background. Place the weather station at eye level. Is it still dim?
- ✓ Weather stations that sit in the sunlight can develop a cloudy film over time.
- ✓ This is generally a power related issue.
- ✓ Batteries may be overpowered or underpowered. Remove batteries from weather station.
- ✓ Press any button 20 times. Leave the weather station unpowered for 1-2 hours.
- ✓ Install fresh Alkaline batteries with correct polarity.

A/C Power Operation:

- ✓ Check that the A/C power cord connects correctly to the weather station and outlet.
- ✓ If using batteries in the weather station as well, remove them and see if the weather station goes blank, indicating a faulty A/C power cord.
- ✓ Check the backlight intensity setting. The backlight can be on high, low or off.

Weather station has distorted display

- ✓ On a brand new weather station, check for thin plastic films of printed scratch guard that may be on the upper and lower screen of the weather station. This thin piece of plastic has printed numbers for store displays.
- ✓ With all power removed, the weather station should be blank.
- ✓ If numbers still appear, please check for scratch guard.
- ✓ Check that the batteries and A/C power cord connect correctly.
- ✓ This is generally a power related issue.
- ✓ Batteries may be overpowered or underpowered.
- ✓ Remove batteries and A/C power cord from weather station.
- ✓ Press any button 20 times. Leave the batteries and A/C power cord out of the display for 2 hours.
- ✓ Insert A/C power cord into a good outlet first, then into the weather station.

Weather station display is frozen

- ✓ On a brand new Weather station, check for thin plastic films of printed scratch guard that may be on the upper and lower screen of the weather station. This thin piece of plastic has printed numbers for store displays. This can make the weather station display appear “frozen”.
- ✓ With all power removed the weather station should be blank.
- ✓ If numbers still appear, please check for scratch guard.
- ✓ Check that the batteries and A/C power cord connect correctly.
- ✓ This is generally a power related issue.
- ✓ Batteries may be overpowered or underpowered.
- ✓ Remove batteries and A/C power cord from weather station.
- ✓ Press any button 20 times. Leave the batteries and A/C power cord out of the display for 2 hours.
- ✓ Insert A/C power cord into a good outlet first, then into the weather station.

Weather station is blank: No letters, numbers or dashed lines

- ✓ Check that the batteries and A/C power cord connect correctly.
- ✓ Batteries may be overpowered or underpowered.
- ✓ Remove batteries and A/C power cord from weather station.
- ✓ Press any button 20 times. Leave the batteries and A/C cord out of the display for 2 hours.
- ✓ Insert A/C power cord into a good outlet first, then into the weather station.

City Codes-Time zone-SEE PAGE 19

Set the Time Zone by selecting a City code in your time zone.

1. Press the UP or DOWN arrow button until the **clock and alarm icon** flashes.
2. Hold the SET button until the day of week language abbreviation **ENG** will flash. Press the SET button to move to select the city code for your time zone.
3. City Code **LAX** (Los Angeles) will flash. Use the UP and DOWN button to select a city code in your **time zone**.
4. Press and release the SET button repeatedly to move thru the program menu items, past the minutes to confirm and exit. If you do not move through the entire program menu, the city selection will not save.

North America	Time Zone Offset	Code
Las Vegas, NV	-8	LAS
La Angeles, CA	-8	LAX
Portland, OR	-8	PDX
San Diego, CA	-8	SAN
Seattle, WA	-8	SEA
San Francisco, CA	-8	SFO
San Jose, CA	-8	SJC
Vancouver, Canada	-8	VAC
Vancouver BC, Canada	-8	YVR
Denver, CO	-7	DEN
El Paso, TX	-7	ELP
Phoenix, AZ	-7	PHX
Calgary Alberta, Canada	-7	YYC
Austin, TX	-6	AUS
Birmingham, AL	-6	BHM
Nashville, TN	-6	BNA
Chicago, IL	-6	CGX
Chihauhua, Mexico	-6	CUU
Dallas, TX	-6	DAL
Houston, TX	-6	Hou
Memphis, TN	-6	MEM
Mexico City, Mexico	-6	MEX
Milwaukee, WI	-6	MKE
Minneapolis, MN	-6	MSP
New Orleans, LA	-6	MSY
Oklahoma City, OK	-6	OKC
San Antonio, TX	-6	SAT
St Louis, MO	-6	STL
Atlanta, GA	-5	ATL
Boston, MA	-5	BOS
Baltimore, MD	-5	BWI
Cleveland, OH	-5	CLE
Columbus, OH	-5	CMH
Cincinnati, OH	-5	CVG
Washington, DC	-5	DCA
Detroit, MI	-5	DTW
Havana, Cuba	-5	HAV
Indianapolis, IN	-5	IND
Jacksonville, FL	-5	JAX
Miami, FL	-5	MIA
New York, NY	-5	NYC
Philadelphia, PA	-5	PHL
Pittsburgh, PA	-5	PIT
Tampa, FL	-5	TPA
Montreal, Quebec, Canada	-5	YMX
Ottawa, Ontario, Canada	-5	YOW
Toronto, Ontario, Canada	-5	YTZ

Other Countries	Time Zone Offset	Code
Addis, Ababa, Ethiopia	3	ADD
Adelaide, Australia	9.5	ADL
Ankara, Turkey	2	AKR
Algiers, Algeria	1	ALG
Amsterdam, Netherlands	1	AMS
Stockholm, Arlands, Sweden	1	ARN
Asuncion, Paraguay	-3	ASU
Athens, Greece	2	ATH
Bucharest, Romania	2	BBU
Barcelona, Spain	1	BCN
Belgrade, Yugoslavia	1	BEG
Beijing, China	8	BEJ
Berlin, Germany	1	BER
Birmingham, England	0	BHX
Bangkok, Thailand	7	BKK
Brisbane, Australia	10	BNE
Bordeaux, France	1	BOD
Bogata, Columbia	-5	BOG
Bremen, Germany	1	BRE
Brussels, Germany	1	BRU
Buenos Aires, Argentina	-3	BUA
Budapest, Hungary	1	BUD
Cairo, Egypt	2	CAI
Caracas, Venezuela	-4	CCS
Calcutta, India (as Kolkata)	5.5	CCU
Cordoba, Argentina	-3	COR
Copenhagen, Denmark	1	CPH
Cape Town, South Africa	2	CPT
New Dehli, India	5.5	DEL
Dakar, Sengal	0	DKR
Dublin, Ireland	0	DUB
Durban, South Africa	2	DUR
Kinshasa, Congo	1	FIH
Frankfurt, Germany	1	FRA
Glasgow, Scotland	0	GLA
Guatemala City, Guatemala	-6	GUA
Hamburg, Germany	1	HAM
Helsinki, Finland	2	HEL
Hong Kong, China	8	HKG
Irkutsk, Russia	8	IKT
Jakarta, Indonesia	7	JKT
Johannesburg, South Africa	2	JNB

Other Countries	Time Zone Offset	Code
Kingston, Jamaica	-5	KIN
Osaka, Japan	9	KIX
Kuala Lumpur, Malaysia	8	KUL
Lima, Peru	-5	LIM
Lisbon, Portugal	0	LIS
London, England	0	LON
La Paz, Bolivia	-4	LPB
Liverpool, England	0	LPL
Lyon, France	1	LYO
Madrid, Spain	1	MAD
Melbourne, Australia	10	MEL
Milan, Italy	1	MIL
Manila, Phillipines	8	MNL
Moscow, Russia	3	MOW
Marseille, France	1	MRS
Munich, Germany	1	MUC
Montevideo, Uraguay	-3	MVD
Naples, Italy	1	NAP
Nairobi, Kenya	3	NBO
Nanjing (Nanking), China	8	NKG
Odessa, Ukraine	2	ODS
Omaha, Nebraska, USA	-6	OMA
Oslo, Norway	1	OSL
Paris, France	1	PAR
Perth, Australia	8	PER
Prague, Czech Republic	1	PRG
Panama City, Panama	-5	PTY
Rangoon, Myanmar	6.5	RGN
Rio de Janeiro, Brazil	-3	RIO
Reykjavik, Iceland	0	RKV
Rome, Italy	1	ROM
Santiago, Chile	-4	SCL
Shanghai, China	8	SHA
Singapore, Malasia	8	SIN
Sofia, Bulgaria	2	SOF
Sao Paulo, Brazil	-3	SPL
Salvador, Brazil	-3	SSA
Sydney, Australia	10	SYD
Toykyo, Japan	9	TKO
Tripoli, Libya	2	TRP
Vienna, Austria	1	VIE
Warsaw, Poland	1	WAW
Zurich, Switzerland	1	ZRH