A7 Entry-level Weather Station

User Manual

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Technical Support E-mail: airaintech@gmail.com

1. Introduction

Thank you for your purchase of the A7 Weather station. The following user guide provides step by step instructions for installation, operation and troubleshooting.

2. Warnings

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

⚠**Warning:** Installing your weather station in an elevated location may result in injury or death. Safety goes first. Make sure your setup and preparation is secure and taking no risks.

3. Getting Started

The weather station consists of a display console (receiver), a sensor array with Integrated Outdoor Transmitter and mounting hardware.

3.1Parts List

The weather station consists of the following parts (as referenced in Figure 1).

QTY	Item	Image
1	Display Console Frame Dimensions: 18.5x15x2.5cm (7.3x5.9x0.98inch) LCD Dimensions: 15.0x11.5cm (5.9x4.5inch)	
1	Integrated Outdoor Transmitter Dimensions: 330x280x150mm (13x11x5.9 inch)	
1	Foot Mounting (with pole insert) Dimensions: 101x76x37mm	
1	Mounting Bracket Back Plate (pole mount) Dimensions: 76x75x20mm	

1	Mounting Pole Dimensions: 300x30x24mm (11.8x1.18x0.94inch)	
2	Pole mounting nuts (M3) / bolts Ø3)	
4	Pole mounting nuts (M5) / bolts (Ø5)	
4	Tapping screws	
1	Manual	
1	Power Adapter	

Figure 1

3.2 Product Description

3.2.1 Display Console

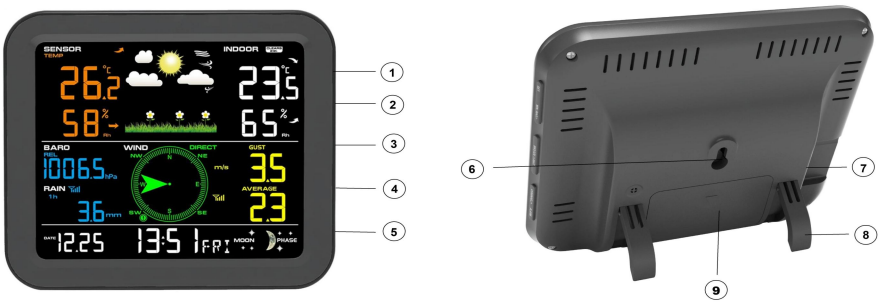


Figure 2

1.[MAX/MIN/-]

Press to change the display mode/Min/Max record/decrease.

Press and hold the ***MAX/MIN/-*** key for three seconds to clear all Max/Min values.

2.[ALARM]

Press to view HI/LOW alarms.

Press and hold **ALARM** key for three seconds to toggle the **BZ ON** (beeper on) or **BZ OFF** (beeper off) depending on the current setting.

3.[SNOOZE/LIGHT]

Press to activate the snooze function/adjust display brightness.

Press and hold for 3 seconds to toggle the backlight turn on or turn off.

4.[SET]

Press repeatedly to select Time (Time/Date, Time/Second, Time/Week), Rainfall (1h, 24h, week, month, total), Barometric pressure (Absolute pressure and relative pressure), Outdoor temperature (dew point and feels like). Hold in to enter settings mode.

5.[CHANNEL/+]

Press and hold for 3 seconds to synchronize a sensor/advance.

6.Hanging hole

7.Power adapter connector

8.Table stand

9.Battery cover

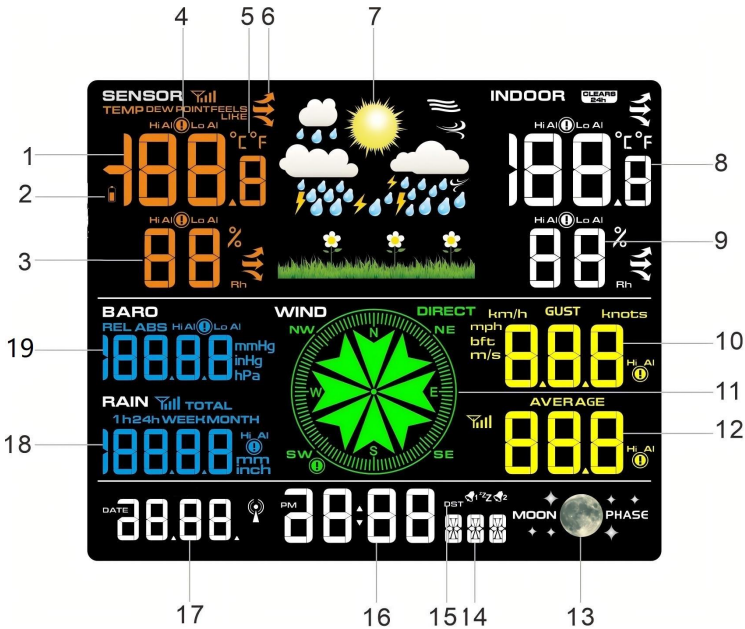


Figure 3

1.Outdoor temperature mode
2.Outdoor Battery low voltage prompt
3.Outdoor humidity display
4.Outdoor temperature HI/LO alarm icon
5.Temperature units (°F or °C)
6.Outdoor temperature change indication
7.Weather forecast
8.Indoor temperature display
9.Indoor humidity display
10.Wind speed Gust display
11.Wind direction
12.Wind speed average display
13.Moon phase
14.Week or Second display
15.DST
16. Time
17. Date
18. Rainfall display (1h, 24h, week, month, total)
19. Pressure (REL and ABS) display

3.2.2. Outdoor Sensor

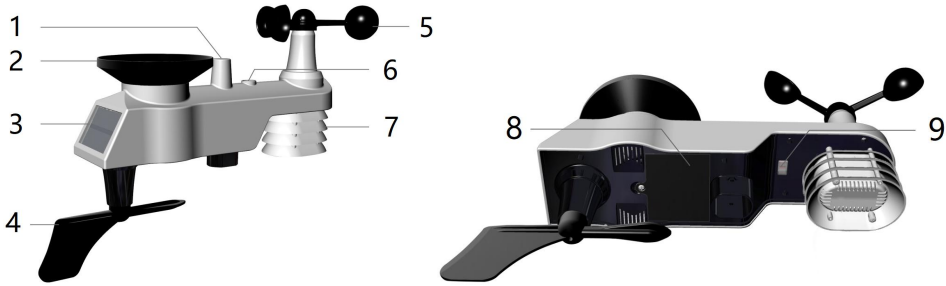
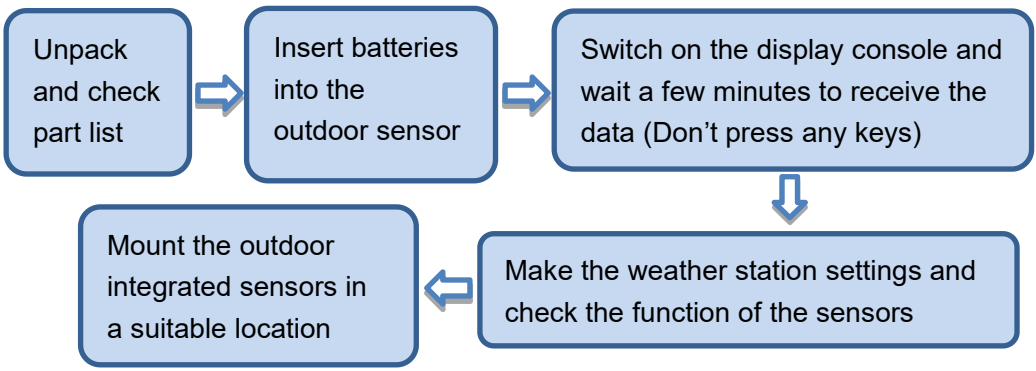


Figure 4

1. Antenna
2. Rain Collector
3. Solar Panel
4. Wind Vane
5. Wind Cups
6. Level Indicator
7. Thermo-Hygrometer Radiation Shield
8. Battery compartment
9. LED and RESET Button

4. Installation



⚠ **Note:** Insert batteries into the outdoor unit before switching on the display console. When inserting batteries into the units, note the markings in the battery compartments to ensure correct polarity.

4.1 Recommend Tools

- Precision screwdriver (for small Phillips screws)
- Compass or GPS (for wind direction calibration)
- Adjustable Wrench

4.2 Sensor Assembly Set Up

Note: The outdoor sensor array must be powered and updating before

powering up the console, or the console will stop scanning and connecting with the sensors.
The following illustration shows the full segment of integrated outdoor sensor including Thermo-Hygrometer, Wind Cup, Wind Vane and Rain collector, as shown in Figure 5.

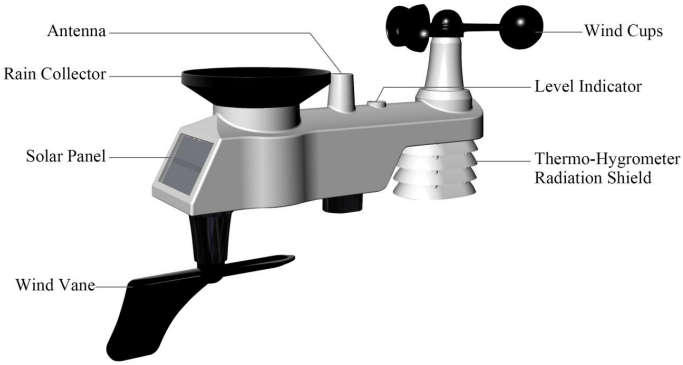


Figure 5

4.2.1 Install Integrated Outdoor Sensor Battery.
Locate the battery door on the bottom of transmitter as show in Figure 6.

Note: Do not install the batteries backwards. You can permanently damage the outdoor sensors. The solar panel does not charge the batteries, so rechargeable batteries are not recommended.

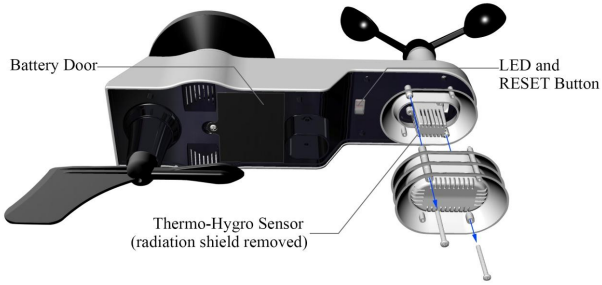


Figure 6

Remove the battery door on the back of the sensor by removing the set screw, as show in Figure 7.



Figure 7

Inserting 3xAA fresh batteries as show in Figure 8**.** Close the battery door. Make sure that the gasket (around the battery compartment) is properly seated in its trace prior to closing the door and Tighten the set screw.

Note: We recommend installing Lithium AA batteries for outdoor sensors in cold weather environments.



Figure 8

The Integrated outdoor sensor LED indicator(White button) will light for 3 seconds, and then flash once per 16 seconds thereafter. Each time it flashes, the sensor is transmitting data.

Note: If the sensor does not power up after inserting the batteries, press the reset button as shown in Figure 9.

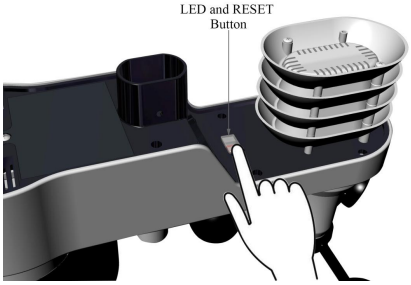


Figure 9

4.3 Display Console

4.3.1 Setup the Display Console

1. Plug in the display console with power adapter.

BL ON will display in the time area for three seconds when powered up.

Note: It is recommended to plug in the power adapter to reduce the battery consumption and extend the service life.



Figure 10

2. Display Console Batteries Installation

Before installing the battery, please close the built-in bracket. Then remove the battery door on the back of the display, as shown in Figure 11. Install three AAA (alkaline or lithium) batteries. The display will beep once and layout of display will light up for a few seconds to verify all segments are operating properly.

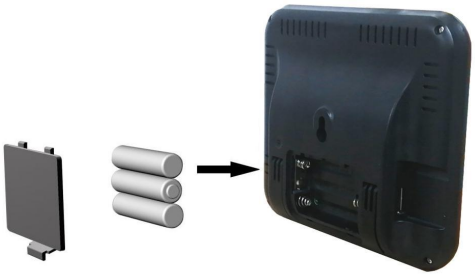


Figure 11

Recover the battery door, and unfold out the desk stand to place the console in the upright position.

Note: The battery is a back-up of weather station console, saving console settings when powered off from adaptor.

4.3.2 Connect Sensors with Display Console

Once the display console is powered up, it will automatically scan all the nearby Integrated Outdoor sensors.

Note: Do not press any button until all the remote sensors report in the display screen, otherwise the display console will terminate to connect with remote sensors.

Note: While in the search mode, the remote search icon will be constantly displayed until all the measured values received. The console will automatically switch to the normal mode from which all further settings can be performed.

When connected with the Integrated Outdoor Sensor, the measured value(Outdoor temperature and humidity, wind speed (wind gust and average), wind direction, rainfall, Indoor temperature and humidity) will show up on the display console.

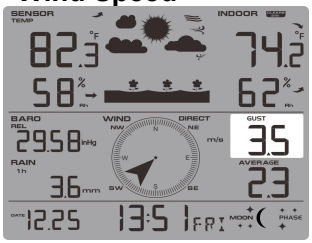
Note: Make sure that the distance between weather station sensors and display console should be within 3m (10ft) to 30m (98ft). If the weather station sensors is too close or too far away, it may not receive a proper signal.

4.4 Checking the Console Running Condition

Once the display console is powered on, it will begin to scan automatically remote sensors in the vicinity. The remote search icon will display. When remote sensor values are displayed in the console, operations of the sensor can be tested. If the console can not sync or loses communications with the remote sensor, - - will appear on the display. To reacquire the signal, press and hold the **CHANNEL/+** button for 3 seconds to enter search mode, the remote search icon will be

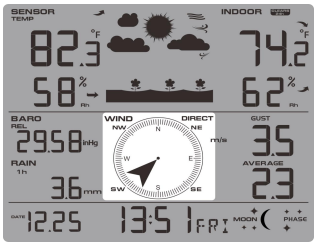
constantly displayed. Once the signal is reacquired, the remote search icon will turn off, and the current values will be displayed.

Wind Speed



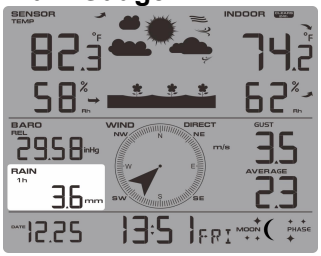
Rotate the wind cups manually or with a constant speed fan. Verify the wind speed is not reading 0.0.

Wind Direction



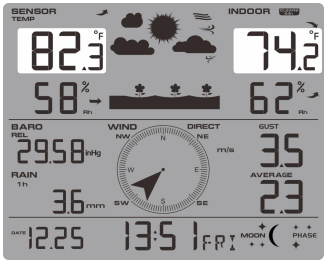
Moving the weather vane, check that the direction indicated on the display changes as the weather vane is turned.

Rain Gauge



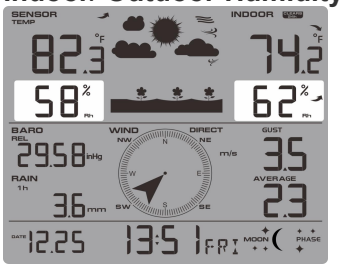
Verify proper operation of the rain gauge. Tip the Integrated outdoor sensor South and North (S and N molded on the body of the outdoor sensor) several times. You will hear a “ticking” sound within the rain gauge. Verify the rain reading on the display console is not reading 0.00. Each “ticking” represents 0.3mm(0.01 inch) of rainfall.

Indoor/ Outdoor Thermometer



Verify the indoor and outdoor temperature match closely with the console and sensor array in the same location (about 5 to 10’ (1.5 to 3 meters) apart). The sensors should be within 4°F /2°C (the accuracy is ±2°F/1°C). Allow about 30 minutes for both sensors to stabilize.

Indoor/ Outdoor Humidity



Verify the indoor and outdoor humidity match closely with the console and sensor array in the same location (about 5 to 10' (1.5 to 3 meters) apart). The sensors should be within 10% (the accuracy is ± 5%). Allow about 30 minutes for both sensors to stabilize.

4.5 Radio Controlled Clock (RCC)

After the console is powered up, it will first sync with remote sensor for 3 minutes and then begin receiving Radio Controlled Clock (RCC) signals. During this period do not operate any buttons on the console, otherwise the above process will be terminated. During RCC reception period (maximum 10 minutes), the receiver signal will flash. Weather data will not be transmitted at the same time to avoid interferences.

If RCC signals are not received successfully within 10 minutes, the console will terminate RCC reception and continue to receive remote weather data. RCC reception will be resumed automatically every one hour until RCC signals are successfully captured. In some locations it may take a couple days to receive the RCC signals. Once RCC reception is successful, the RCC tower icon will be displayed on the console.

1. Radio Controlled Clock(RCC)(default: ON)

Press and hold the **SET** key for 3 seconds to set the RCC ON/OFF. The RCC (ON or OFF) will begin flashing. Press the **[+]** or **[-]** key to toggle between RCC ON (adjusts automatically to the atomic clock) and RCC OFF (quartz clock).

2. Daylight Saving Time Settings (default: OFF).

Press SET key once again to set DST. When DST is off, no icon appears on display. Press**[+]** or **[-]** key to toggle between DST ON or DST OFF. When DST is on, icon "DST" appears on display.

Note: Arizona does not observe daylight savings time. If you live in Arizona and DST is in effect, you will need to change your time zone to -8 for Pacific.

3.Time Zone Settings (default: -7).

Press the **SET** key again to adjust the Time Zone (TZ) setting. Press the **[+]** key or **[-]** key to adjust the time zone from -12 to 12, based on the number of hours from Coordinated Universal Time, or Greenwich Mean Time (GMT).

The following table provides times zones throughout the world. Locations in the eastern hemisphere are positive, and locations in the western hemisphere are negative.

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 WET: Western European	London, England
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

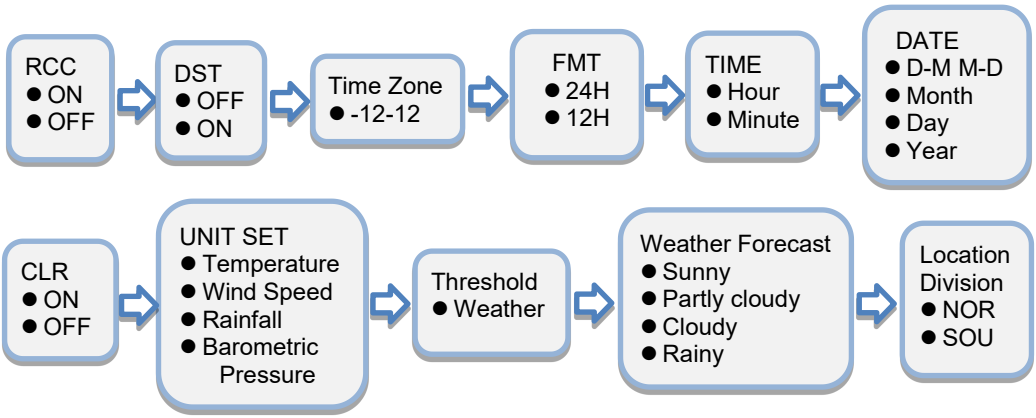
5. Functions Introduction

5.1 Set (Program) Mode

In Normal display mode, press and hold the **[SET]** key for 3 seconds to enter the **[SET]** mode. The first setting will begin flashing. You can press the **[SET]** key again to skip any step, as defined below.

Note: In the Set mode, press the **[*CHANNEL/*+]** key or **[*MAX/MIN/*-]** key to change or scroll the setting value. Hold the **[*CHANNEL/*+]** key or **[*MAX/MIN/*-]** key for three seconds to increase/decrease rapidly.

Note: To exit the Set mode at any time, press the **[*SNOOZE/LIGHT*]** button of the display console.



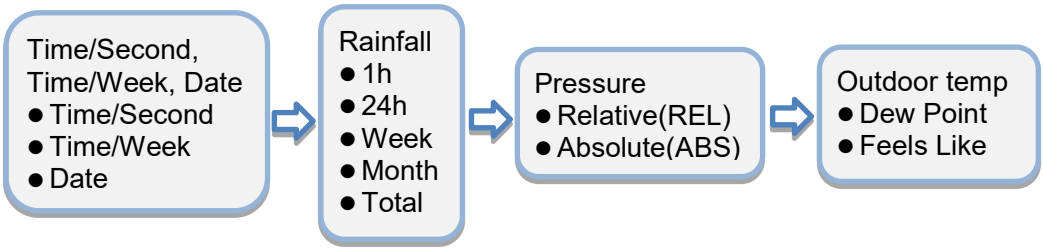
- **RCC:** Select RCC ON or OFF(default: ON)
  -- RCC ON (adjusts automatically to the atomic clock)
  -- RCC OFF (uses the quartz clock)
- **DST:** Select DST ON or OFF(default: OFF)
  -- DST ON,no icon appears on console. (adjusts automatically to the atomic clock)
  -- DST OFF, “DST” will appear on console. (uses the quartz clock)
- **Time Zone Setting:** (default: -7)
  -- Set the time zone from -12 to 12
  Refer to the 4.5 Radio Controlled Clock (RCC)
- **FMT:** Select either 12hour or 24 hour time display
- **TIME:** Set the hours and minutes.
- **DATE:**
  -- Set the order of how the day and month are displayed: M-D or D-M
  -- Month setting
  -- Day setting
  -- Year setting
- **CLR: (default: ON)**
  -- Select ON the min/max readings can be programmed to clear daily (at midnight). "CLEARS 24" is shown in the display.
  -- Select OFF the min/max readings will be clear manually. Refer to the Reset Min/Max Record (Clearing Recorded Readings).
- **UNIT SET:**
  -- Temperature: Set the unit of measurement in which the temperature is to be displayed: °F or °C.
  --Wind Speed: Set the unit of measurement in which the wind speed is to be displayed: Mph,m/s, km/h, knots or bft.
  -- Rainfall: Set the unit of measurement in which the rainfall is to be displayed mm or inches.
  -- Barometric Pressure: Set the unit of measurement in which the pressure is to be displayed inHg, mmhg or hPa.
- **Threshold**

--Weather: The pressure threshold (the negative or positive rate of change of pressure signifying a change in the weather) can be adjusted from 2 mbar/ hour to 4 mbar/hour (default level 2 mbar/hour).
Note: The lower the level pressure threshold setting, the higher sensitivity for weather forecast changes. Locations that experience frequent changes in air pressure require a higher setting compared to locations where the air pressure is typically stagnant.

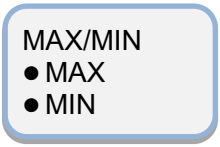
- **Weather Forecast**
  Weather forecast indication based on the current weather conditions. Selection options: Sunny,Partly Cloudy,Cloudy, Rainy.
  Refer to the 8.1-8.2 Weather Forecasting
- **Location Division:(default:North)**
  --Select the position of the earth Northern Hemisphere (NORT) or Southern Hemisphere (SOUT).

5.2 Changing the Display Mode

- **1.** In normal display mode, press the **[SET]** to repeatedly to select between the Date/Year, Rainfall(1h, 24h, week, month and total),Pressure (Absolute pressure and Relative pressure),Outdoor(Dew Point and Feels Like).
  2. Press **[CHANNEL/+]** or **[MAX/MIN/-]** to change the value.
  3. You can return to normal display mode at any time by pressing **[SNOOZE/LIGHT]**.



- **Time/Date:** Select between display Time/Second, Time/week or Date.
- **Rainfall:** Select between display 1h, 24h, week, month or total.
- **Pressure:** Select between display Relative pressure or Absolute pressure.
- **Outdoor temp:**Select between display Dew Point or Feels like.
- **Max/Min:**
  In normal display mode, press **[MAX/MIN/-]** once time to select Max or Min.



- **Rainfall**
  --In normal display mode, press the **[SET]** twice to select the display mode for rainfall.

--Press the **[CHANNEL/+]** or **[MAX/MIN/-]** key to toggle between 1h, 24h, week, month and total.

To clear the total rain, press the **[CHANNEL/+]** or **[MAX/MIN/-]** button until total rain is displayed. The total rain will flash. **Touch and hold** the **SET** button for five seconds until total rain reads 0.00.

Note: Rainfall periods are calculated as below:

1H=From start of the hour to the current time. (For example, at 08:25, 1H rainfall means rainfall amount from 08:00 to 08:25)

24H=From start of the day to the current time.(For example, at 08:25,24H rainfall means rainfall amount from 00:00 to 08:25)

Week=From start of the week to the current time. (For example, at 08:25 of Thursday, Week rainfall means rainfall amount from 00:00 of this Sunday to 08:25 this Thursday.)

Month=From start of the month to the current time. (For example, at 08:25 of Oct. 20, Month rainfall means rainfall amount from 00:00 of 1st Oct. to 08:25 20th Oct.)

Total=Total rainfall amount from the first powering on or the latest reset the total manually.

Note: Resetting the weekly rain also resets the 24H and 1H rain. Resetting the monthly rain also resets the 1H , 24H and weekly rain.

Resetting the total rain also resets the monthly, weekly,24H and 1H rain.

5.3 Max/Min Viewing and Reset Mode

5.3.1 Max Record Viewing and Reset

-- In normal mode, press (do not hold) the **[MAX/MIN/-]** key**,** the **MAX** icon will be displayed in date area.
Press the **[SET]** key to view max values of rainfall (1h, 24h, week or month), wind gust and average,barometric pressure (ABS or REL), outdoor temperature and humidity (feels like or dew point) and indoor temperature and humidity.

-- Press the **[MAX/MIN/-]** once more the ***MIN*** icon will be displayed.Press the **[SET]** key to view min values of barometric pressure (ABS or REL), outdoor temperature and humidity (feels like or dew point), and indoor temperature and humidity.

5.3.2 Clearing Recorded Readings

-- In normal mode, press **[MAX/MIN/-]** once to select MAX or MIN.

-- Hold the **[MAX/MIN/-]** key for 3 seconds (CLR will flash) to clear the max or min readings respectively.

Note: For automatic clearing of max/min readings every night at midnight, refer to the ***Set (Program) Mode(CLR) section***.

-- Press the **[SNOOZE/LIGHT]** key to exit the min/max checking and reset mode, return to normal display mode.

5.4 Snooze Mode

If the alarm sounds, and you wish to silence the alarm, press the **[SNOOZE/LIGHT]** key, the backlight will turn on. The alarm icon will continue to flash and the alarm will silence for five minutes.

Press any key (***MIN/MAX/-, ALARM, SET, CHANNEL/+***) to permanently exit the **[SNOOZE/LIGHT]** mode.

5.5 Backlight Mode

Adjustable Brightness of Backlight

There are 3 levels of brightness of display backlight. When the backlight is on, press the **[SNOOZE/LIGHT]** key to switch between the 3 levels or off.

Note 1: If the display console plugged into AC adapter power, the time area will display **BL ON** and the backlight will remain on. It is not recommended leaving the display backlight on for a long period of time when operating on batteries only, or the batteries will run out quickly.

Note 2: The backlight operation is different when operating on batteries to save power.

Press and hold the **[SNOOZE/LIGHT]** button for 3 seconds to switch the backlight on or off.

If the display console only powered by battery, and backlight is off, Press the **[SNOOZE/LIGHT]** button once. The backlight will turn on for five seconds, and if no operation is performed for three seconds, the backlight will turn off.

6. Alarm Mode

6.1 Sound setting for buttons and alarms

In normal mode, hold the **[ALARM]** key for 3 seconds to switch the sound ON or OFF. BUZZ ON(beeper on) or BUZZ OFF(beeper off) will appear in the time area display.

Note: When an alarm condition is exceed, the alarm icon will flash (visual) and the alarm beeper will sound (audible). To silence the beeper, press any key.

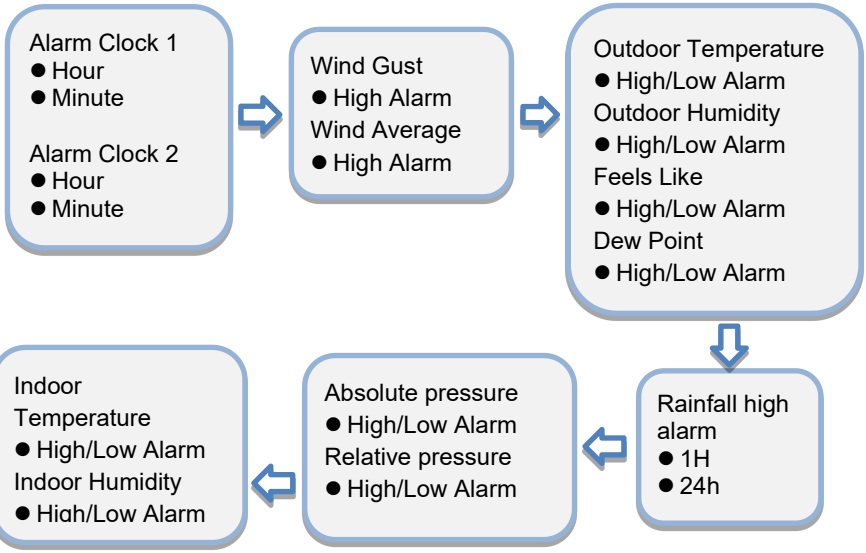
6.2 Viewing the High and Low Alarms

- In normal display mode, press(do not hold) the **[ALARM]** key to enter the alarm mode. “HI AL1” will be shown with the set “HI AL1” alarm value. Press (do not hold) the **[SET]** key “HI AL2” will be shown with the set “HI AL2” alarm value.
- Press **[ALARM]** once more, “LOW AL1” will be shown with the set “LOW AL1” alarm value.Press(do not hold) the **[SET]** key “LOW AL2” will be shown with the set “LOW AL2” alarm value.
- Press the **[SNOOZE/LIGHT]** key at any time to return to the normal mode.

6.3 Setting the Alarms

-- In normal display mode, press (do not hold) **[ALARM]** key to enter the alarm mode, “HI” will appear on the display.

-- Hold the **[SET]** key for 3 seconds to enter the alarm set mode.
-- Press or hold in **[CHANNEL/+]** or **[MAX/MIN/-]** to change the value.
-- Activate or deactivate the alarm by pressing **[ALARM]**. Select ON or OFF. The symbol comes on, indicate that the alarm is activated.
-- Confirm each step with **[SET]**.
-- Press the **[SNOOZE/LIGHT]** key at any time to return to the normal mode.



- Alarm Clock: Set the alarm clock (hours, minutes).
- Wind Gust: Set the high alarm limits for wind gust.
- Wind Average: Set the high alarm limits for wind average.
- Outdoor: Set the upper “HI” and lower “LOW” alarm limits for the outdoor thermometer/humidity/dew point.
  -- Temperature: Set the alarm limits for the outdoor temperature.
  -- Humidity: Set the alarm limits for the outdoor humidity.
  -- Feels Like: Set the alarm limits for the feels like.
  -- Dew Point: Set the alarm limits for the dew point.
- Rainfall: Set the alarm limits for rainfall (1hour “1h”, 24hour “24h”).
- Absolute Pressure: Set the alarm limits for the absolute pressure.
- Relative Pressure: Set the alarm limits for the relative pressure.
- Indoor: Set the upper “HI” and lower “LOW” alarm limits for the indoor temperature/humidity.
  -- Temperature: Set the alarm limits for the indoor temperature.
  -- Humidity: Set the alarm limits for the indoor humidity.

Note: To prevent repetitive temperature alarming, there is a 0.5°C(0.9°F) tolerance band. For example, if you set the high alarm to 26.7°C(80°F) and silence the alarm, the alarm icon will continue to flash until the temperature falls below 26.2°C(79.1°F), at which point, the alarm will reset and must increase above 26.7°C(80°F) to activate again.

Note: To prevent repetitive alarming of humidity, there is a 4% tolerance band in humidity alarm. For example, if you set the high alarm to 60% and silence the alarm, the alarm icon will continue to flash until the humidity falls below 56%, at which point, the alarm will reset and must increase above 60% to activate again.

7. Optional Calibration Mode

Note: The calibrated value can only be adjusted on the display console. The outdoor remote sensor(s) always displays the un-calibrated or measured value.

Note: The measured humidity range is between 10% and 99%. Humidity cannot be accurately measured outside of this range. Thus, the humidity cannot be calibrated below 10% or above 99%.

The purpose of calibration is to fine tune or correct for any sensor error associated with the devices margin of error. The measurement can be adjusted from the console to calibrate to a known source.

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

7.1 Calibration of Temperature Mode

In normal mode, press and hold the **[SET]** and **[CHANNEL/+]** keys at the same time for five seconds to enter the indoor temp calibration mode. The indoor temperature will begin flashing.

Press the **[CHANNEL/+]** key or **[MAX/MIN/-]** key to increase or decrease the temperature reading (in increments of 0.1). Press and hold the **[CHANNEL/+]** key or **[MAX/MIN/-]** key for three seconds to increase or decrease rapidly.
Press the **[ALARM]** key to reset current value.
Press the **[SET]** key switch to outdoor temp calibration mode.

To exit the temperature calibration mode at any time, press the **[SNOOZE/LIGHT]** button on the top of the display console. If no operation is performed, the calibration mode will timeout in 30 seconds.

7.2 Calibration of Humidity Mode

In normal mode, press and hold the **[SET]** and **[MAX/MIN/-]** keys at the same time for five seconds to enter into the humidity calibration mode. The indoor humidity will begin flashing.

Press the **[CHANNEL/+]** key or **[MAX/MIN/-]** key to increase or decrease the humidity reading (in increments of 1%). Press and hold the **[CHANNEL/+]** key or **[MAX/MIN/-]** key for three seconds to increase or decrease rapidly.

Press the **[ALARM]** key to reset current value.

Press the **[SET]** key switch to outdoor humidity calibration mode.

To exit the humidity calibration mode at any time, press the **[SNOOZE/ LIGHT]** button on the top of the display console. If no operation is performed, the calibration mode will timeout in 30 seconds.

Note: The Humidity is a difficult parameter to measure accurately and drifts over time. The calibration feature allows you to zero out this error. To calibrate humidity, you will need an accurate source, such as a sling psychrometer or Humidipaks One Step Calibration kit.

7.3 Calibration of Sensors Mode

In normal mode, press and hold the **[SET]** and **[ALARM]** keys at the same time for five seconds to enter the pressure wind gust , rainfall, pressure mode. The letter "CAL" will appear at the bottom of the screen.
Press the **[SET]** key to skip over a parameter to the next.

◆ Absolute Pressure Calibration

In the calibration mode,the absolute pressure value will flash (the default is 0.0 hPa(0.00 inHg)).

Press the **[CHANNEL/+]** key or **[MAX/MIN/-]** key to increase or decrease the absolute pressure value (in increments of 0.1 hPa(0.01 inHg)). Press and hold the **[CHANNEL/+]** or **[MAX/MIN/-]** key for three seconds to increase or decrease rapidly.

Press the **[ALARM]** key to reset current value.
Example: The calibrated pressure sources measure 960.7hpa(28.37 inHg). The display console pressure reads 973.6hpa(28.75 inHg).
Offset = 960.7 - 973.6= -12.9hpa (28.37-28.75= -0.38inHg)

◆ Relative Pressure Calibration

In the calibration mode, press the **[SET]** button again, the relative pressure value will flash (the default is 0.0 hPa(0.00 inHg)).

Press the **[CHANNEL/+]** key or **[MAX/MIN/-]** key to increase or decrease the relative pressure value (in increments of 0.1 hPa(0.01 inHg)).Press and hold the **[CHANNEL/+]** or **[MAX/MIN/-]** key for three seconds to increase or decrease rapidly.

Press the **[ALARM]** key to reset current value.

Example: The calibrated pressure sources measure 846.6hPa(25inHg). The display console pressure reads 841.5hPa(24.85inHg).
Offset = 846.6 - 841.5 = 5.1hpa (25-24.85= 0.15inHg)

To exit the sensor calibration mode at any time, press the **[SNOOZE/LIGHT]** button of the display console. If no operation is performed, the calibration mode will be timeout in 30 seconds.

Note: The display console displays two different pressures: absolute (measured) and relative (corrected to sea-level).

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

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

The standard sea-level pressure is 1013.2hpa (29.92inHg). This is the average sea-level pressure around the world. Relative pressure measurements greater than 1013.2hpa (29.92inHg) are considered high pressure and relative pressure measurements less than 1013.2hpa(29.92inHg) are considered low pressure.
To determine the relative pressure for your location, locate an official reporting station near from you (the internet is the best source for real-time barometer conditions, such as the website of Weather.com or Wunderground.com), and set your weather station to match the official reporting station.

◆ **Wind Speed Calibration**
In the calibration mode, the wind speed value will flash (the default is 1.00).
Press the **[CHANNEL/+]** key or **[MAX/MIN/-]** key to adjust the wind speed calibration factor from 0.75 to 1.25, where:
Calibrated Wind Speed = Calibration factor x Measured Wind Speed

Press and hold the **[CHANNEL/+]** or **[MAX/MIN/-]** key for three seconds to increase or decrease rapidly.

Press the **[ALARM]** key to reset current value.

Note: The wind gust is also affected by the wind speed calibration factor.

Discussion: Wind speed and wind gust are adversely affected by installation constraints. The rule of thumb is to install the weather station four times the distance of the height of the tallest obstruction (for example, a 6m(20ft) house would require an installation 24m(80ft) away).

In many instances, due to trees and other obstructions, this is not possible. The wind speed calibration allows you to correct for these obstructions.

In addition to installation challenges, wind speed bearings (any moving part) wears over time. To correct for wear, the correction value can be increased until the wind cups must be replaced.

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

◆ **Rain Calibration**

In the calibration mode, press the **[SET]** button again and the rain value will flash (the default is 1.00).

Press the **[CHANNEL/+]** key or **[MAX/MIN/-]** key to adjust the rain calibration factor from 0.75 to 1.25, where:
Calibrated Rain = Calibration factor x Measured Rain

Press and hold the **[CHANNEL/+]** or **[MAX/MIN/-]** key for three seconds to increase or decrease rapidly.

Press the **[ALARM]** key to reset current value.

Discussion: The rain collector is calibrated at the factory based on the funnel diameter. The bucket tips every 0.3mm of rain (referred to as resolution). The accumulated rainfall can be compared to a sight glass rain gauge with an aperture of at least 4".

Note: that debris and insects can collect inside the tipping mechanism (they make a good spiders nest). Carefully remove the funnel and inspect the tipping mechanism for debris prior to calibration.

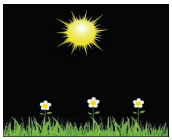
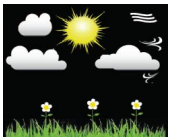
8. Other Features of Display Console

8.1 Weather Forecasting

Note: The weather forecast or pressure tendency is based on the rate of change of barometric pressure. In general, when the pressure increases, the weather improves (sunny to partly cloudy) and when the pressure decreases, the weather degrades (cloudy to rain).

The weather forecast is an estimation or generalization of weather changes in the next 24 to 48 hours, and varies from location to location. The tendency is simply a tool for projecting weather changing conditions and is never to be relied upon as an accurate method to predict the weather.

8.2 Weather Icons

Condition	Icon	Description
Sunny		Pressure is rising and the previous condition is partly cloudy.
Partly Cloudy		Pressure is falling and the previous condition is sunny or Pressure is rising and the previous condition is cloudy.
Cloudy		Pressure is falling and the previous condition is partly cloudy or Pressure is rising and the previous condition is rainy.
Rainy		Pressure is falling and the previous condition is cloudy.

8.3 Moon Phase

The following moon phases are displayed based on the calendar date.

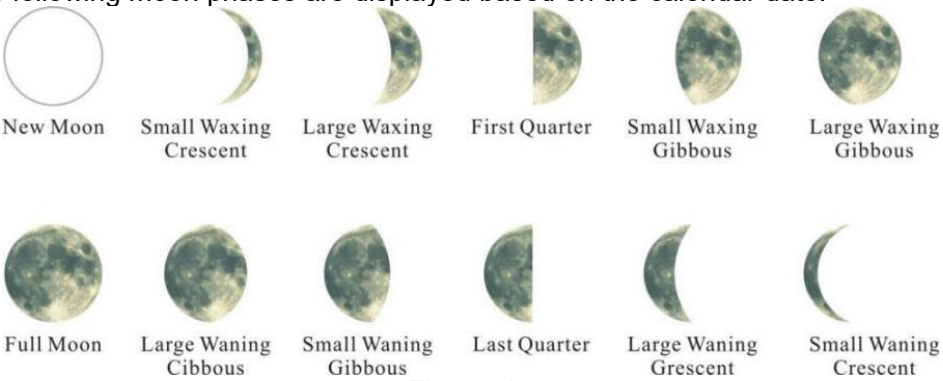


Figure 12

8.4 Pressure Threshold Setting

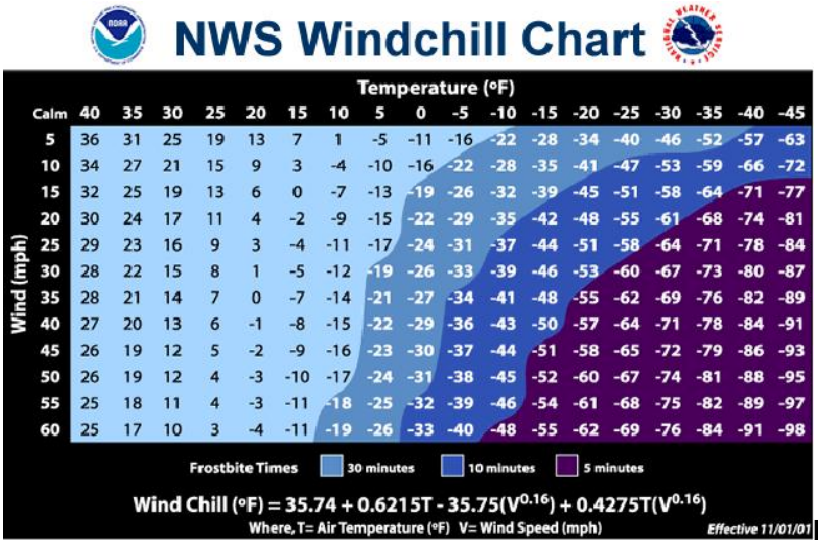
The pressure threshold (the negative or positive rate of change of pressure signifying a change in the weather) can be adjusted from 2 hpa/hour to 4 hpa/ hour (default level 2 hpa/hour).

The lower the level pressure threshold setting, the higher sensitivity for weather forecast changes. Locations that experience frequent changes in air pressure require a higher setting compared to locations where the air pressure is typically stagnant.

8.5 Feels Like Temperature

Feels like temperature is a combination of Heat Index and Wind Chill.

1.Temperatures less than 4.4°C(40°F), the wind chill is displayed, as shown in the National Weather Service Wind Chill Table below:



NWS Windchill Chart

Wind (mph) \ Temperature (°F)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

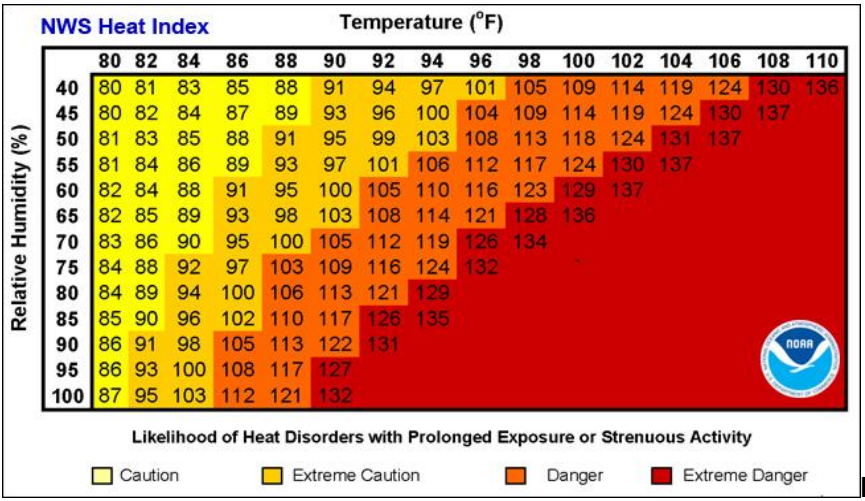
$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

Figure 13

2.When the temperatures is between26.2°C（79.1°F）and 46.1°C（115°F）, the heat index is displayed, as shown in the National Weather Service Heat Index Table below:



NWS Heat Index

Relative Humidity (%) \ Temperature (°F)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Figure 14

When the temperature is between 4.4°C（40°F） and 26.7°C（80°F）, or the relative humidity is less than 35%. The out temperature is displayed (Feels Like temperature is the same as out temperature).

8.6 Restore Factory Default

To reset the display console to factory default (display), press the **[MAX/MIN/-]** key while plugging in power adaptor at the same time (Take out batteries before starting the reset operation).

9. Sensors Pre-installation

9.1 Test the Sensors

Recommend to operate and test the weather station for one week before installing it in the permanent location. In this period, you can check out all of the functions, ensure proper operation, and familiarize with the weather station and calibration procedures. This will also allow you to test the wireless range of the weather station.

9.2 Site Survey

Do a site survey before installing the weather station. Take the following points into Consider:

1. You must clean the rain gauge once per year and change the batteries every two years. Provide as easy access to the weather station.
2. Avoid radiant heat transfer from buildings and structures. In general, install the sensor array at least 1.5m(5ft) from any building, structure, ground, or roof top.
3. Avoid wind and rain obstructions. The rule of thumb is to install the sensor array at least four times the distance of the height of the tallest obstruction. For example, a 6m(20ft) house would require an installation 24m(80ft) away). Use common sense. If the weather station is installed next to a tall building, the wind and rain will not be accurate.
4. Wireless Range. The radio communication between display console and transmitter in an open field can reach a distance of up to 100m(328ft), assume there are no interfering obstacles such as buildings, trees, vehicles, high voltage lines. Wireless radio signals will not penetrate metal buildings. Most wireless applications will only reach up to 30m(98ft) due to building obstructions, walls and interference.
5. Radio interference such as PCs, radios or TV sets can, in the worst case, entirely cut off radio communication. Please take this into consideration when choosing display console or mounting locations.

9.3 Best Practices for Wireless Communication

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

1. Electro-Magnetic Interference (EMI). Keep the console several feet away from computer monitors and TVs.

2. Radio Frequency Interference (RFI). If you have other 433 MHz devices and communication is intermittent, try turning off these other devices for troubleshooting purposes. You may need to relocate the wireless transmitters or receivers to avoid intermittent communication.

3. Line of Sight Rating. This device is rated at 100m(328ft) line of sight (no interference, barriers or walls) but typically you will get 30m(98ft) 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%

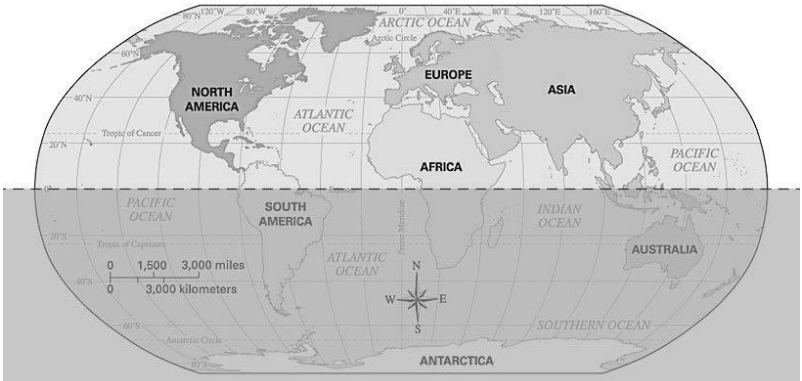
10. Final Installation of Sensors

10.1 Integrated Outdoor Sensor Installation

This Weather Station can be used in both the Northern and Southern Hemispheres. Prior to installation, you will need to calibrate the wind direction.

Note: There are four alphabet letter of N, E, S and W around the wind direction.(N is North, E is East, S is South, W is West)

Northern Hemispheres



Southern Hemispheres

Figure 15

10.1.1 Northern Hemispheres (NOR) References.

The cardinal directions (N, S, E, W) molded on the body of the outdoor sensor are indicators for the Northern Hemisphere only.

Step 1: There is a “S” indicator on the wind vane that indicates South, as shown in Figure 16. Check the wind directions with compass and Align this “S” marker in the direction of South.



Figure 16

Step 2: Console operation set to Northern Hemispheres(**NOR** in the time area) in Location division.

10.1.2 Southern Hemispheres (SOU) References.

For Southern Hemisphere installations, ignore the direction (N, S, E, W), and face **the solar panel to the North** (and in a sunny position) when it comes to install the Integrated outdoor sensor, as show in figure 17.

Step 1: Install the Integrated outdoor transmitter and face the solar panel to the North.



Figure 17

Step 2: Console operation set to Southern Hemispheres(**SOU** in the time area) in Location division.

Note: The location division (NOR or SOU) on the Display Console and the directions of the sensor have to be adjusted to match with your real location.

If the wind direction sensor is not positioned correctly during installation, permanent wind direction error will be introduced.

10.1.3 Mounting & Fixing the Sensor Horizontally

Fasten the integrated outdoor sensor to the mounting pole brackets with two foot-mounting screws Ø3 bolts and M3 nuts.

Then, tighten the mounting pole to your existing mounting pole with the four bolts (Ø5) and nuts (M5) , or fix it on the flat surface with four tapping screws, as show in Figure 18.



Figure 18

10.1.4 Mounting & Fixing the Sensor Vertically

Fasten the integrated outdoor sensor to the mounting pole brackets with two foot-mounting screws Ø3 bolts and M3 nuts.

Then, tighten the mounting pole to your existing mounting pole with the four bolts (Ø5) and nuts (M5) , or fix it on the flat surface with four tapping screws, as show in Figure 19.



Figure 19

Note: Use the bubble level next to the rain sensor to make sure sensor array is completely level. If the sensor is not level, the rain gauge sensor will not measure properly.

1.When installing, please make sure the level bubble is within the small black circle. Tilted installation may result in incorrect readings or even failure to work.

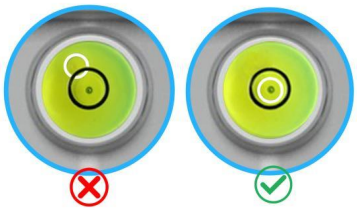


Figure 20

2. Make sure that the sensor array is installed in a clear and open area without obstructions like trees and house.



Figure 21

3. Ideally mounted at a height of 1.2 to 1.8m(4 to 6 ft) above the ground.
4. Rain collector must be cleaned every few months.
5. Verify the rainfall accuracy

A：Use a bottle containing 100g or 100ml of water.

B：Drip water slowly into the rain collector. DO NOT POUR WATER QUICKLY.

C：Observe the rainfall reading of the console after the water is completely dripped out. It should be greater than 11.1mm (0.44in) +/-10%. A portion of the rainwater will splash and fall outside the collector when it actually heavily rains,

D：The rain gauge could not measure rainfall below 0.3mm(0.01in) due to limited resolution.

Simple way to check the accuracy

1.Take off the rain collector top.

2.Hit the spoon shaped part in side the bucket for 10 times (hit once every 3 seconds) and see whether it will register 3.0mm（0.12in） on the console after 3 minutes.

6.Rain gauge reports rain when it it not raining.

Make sure you have a stable, level mounting solution.

Unstable mounting (sway in the mounting pole) may result in incorrect increases of rainfall in strong wind conditions.

7. Rainfall varies a lot in different places or during different periods. Do not compare rainfall readings of the product with weather forecast from TV or radio or other rain gauges. If you do want to compare accuracy with other devices, reset the Total Rainfall to zero first and compare the total rainfall with other devices in the same period.

11. Low Battery Icon

A low battery indicator icon is shown in the display window for integrated outdoor sensor (Near the left of out temperature).

When the low battery icon appears (The Integrated outdoor sensor battery voltage is lower than 3.6V), replace the batteries in the sensor with fresh batteries.

Be sure to never mix old and new batteries, and never mix battery types such as alkaline and lithium together.

12. Maintenance

Clean the rain gauge of Integrated Outdoor Transmitter once every 3 months.

- Unscrew the rain collector funnel by turning it 30°counter clockwise.
- Gently remove the rain collector funnel.
- Clean and remove any debris or insects.
- Install the collector funnel after it has been cleaned and completely dried.

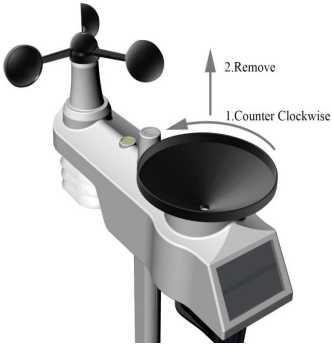


Figure 22

A. Remove the rain collector funnel



Figure 23

B. Install the collector funnel.



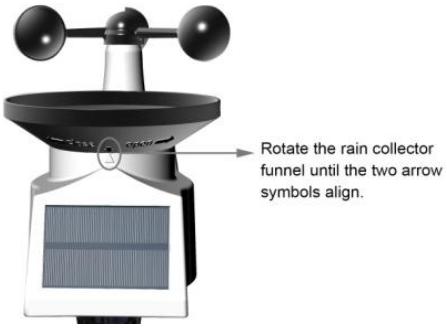


Figure 24

Replace the Integrated outdoor sensor and thermo-hygrometer sensor batteries once every 1-2 years

13. Trouble Shooting Guide

Problem	Solution
Wireless remote not reporting in to console. There are dashes (--.-) on the display console.	1. Make sure the outdoor transmitter is working and check the transmitter light is flashing once per 16 seconds. The battery was low or exhausted will cause the remote sensor does not work, please replace the new batteries in time. For cold weather environments, install lithium batteries. 2. If any of the sensor communication is lost, dashes (--.-) will be displayed on the screen. To reacquire the signal, hold the **CHANNEL** button for 3 seconds, and the remote search icon will be continue to flash. Once the signal is reacquired, the remote search icon will stop flashing, and the current values will be displayed. 3. The maximum line of sight communication range is 328ft(100meters) and 100ft(30meters) under most conditions. Move the sensors assembly closer to the display console. If the sensor assembly is too close (less than 1 meter), move the sensor assembly away from the display console. 4. Make sure the remote sensors are 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.
Indoor and Outdoor Temperature do	Allow up to one hour for the sensors to stabilize due to signal filtering. The indoor and outdoor temperature sensors should agree within 2°C/4°F (the sensor accuracy is ±

not agree.	1°C/2°F). Use the calibration feature to match the indoor and outdoor temperature to a known source.
Indoor and Outdoor Humidity do not agree.	Allow up to one hour for the sensors to stabilize due to signal filtering. The indoor and outdoor humidity sensors should agree within 10 % (the sensor accuracy is ± 5 %). Use the calibration feature to match the indoor and outdoor humidity to a known source.
Display console contrast is weak.	Replace console batteries with a fresh set of batteries.
The atomic clock signal is weak or no signal	A minimum distance of 8feet to all sources of interference , such as televisions or computer monitors. Radio reception is weaker in rooms with concrete walls (e.g.: in cellars) and in offices. In such circumstances, place the device close to the window .
The atomic signal is strong but the wrong time	Make sure your time zone is set correctly. Signal reception is normally better at night and when the weather is clear. The atomic signal generally takes 2~5 days to synchronize, so it is important to manually set the time and date after powering on the display.
Do not set the time or date, and alarm.	While in Normal Mode, **press and hold** the **SET** key for at least three seconds to enter the Set Mode. While in Normal Mode, **press (do not hold)** the **ALARM** key to enter the alarm mode, Then **press and hold** the **SET** key for three seconds. The alarm parameter will begin flashing.
The wrong day of the week displayed.	Please make sure that the year, month, and day are all set correctly.
Do not sound for both alarms and key strokes.	In normal mode, **press and hold** the **ALARM** key for three seconds to turn the beeper on or beeper off.

14. Specifications

14.1 Measurement Specifications

The following table provides specifications for the measured parameters.

Measurement	Range	Accuracy	Resolution

Indoor Temperature	0 to 60 °C (32 to 140°F)	± 1 °C (± 2°F)	0.1 °C(°F)
Outdoor Temperature	-40 to 60 °C (-40 to 140°F)	± 1 °C (± 2°F)	0.1 °C(°F)
Indoor Humidity	10 to 99 %	± 5% (only guaranteed between 20 to 90%)	1 %
Outdoor Humidity	10 to 99%	± 5% (only guaranteed between 20 to 90%)	1 %
Rain	0 to 9999mm (0 to 393inch)	<15mm:±1mm 15mm to 9999 mm:±7%	<1000mm(0.3mm) >1000mm (1mm)
Wind Direction	0 - 360º	± 10º (8 point compass)	± 1º (8 point compass)
Wind Speed	0 to 50 m/s (0 to 112 mph)	2 m/s ~10 m/s: ±0.3m/s, 10m/s~50m/s: ±10% (which ever is greater)	0.1 m/s
Barometric Pressure:	300 to 1100 hpa (8.85 to 32.50 inHg)	± 3 hpa (± 0.08 inHg)	0.1 hpa (0.01 inHg)

14.2 Wireless Specifications

Wireless Transmit Range (in open air):	100m (328ft)
Frequency:	433MHz
Integrated Outdoor Sensor Data Update Period:	16s

14.3 Power Consumption

Display Console	3 x AAA 1.5V Alkaline or Lithium batteries (not included)
Integrated Outdoor Sensor	3xAA alkaline batteries or Lithium batteries (not included), the batteries provide backup power when there is limited solar energy. **Note**: Solar panel doesn't charge the battery and it is an auxiliary power supply.
Adapter	5.9V~500mA(included)
Battery life	Minimum 12 months for sensors (use lithium batteries in cold weather climates less than -20°C(-4°F).