

# PROFESSIONAL WEATHER STATION

## INSTRUCTION MANUAL

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|   | <b>Page</b> |
|---|-------------|
| <b>1. Introduction.....</b>                             | <b>2</b>    |
| <b>2. Inventory of contents.....</b>                    | <b>2</b>    |
| 2.1 Feature of the base station.....                    | 2           |
| 2.2 Feature of wind sensor.....                         | 3           |
| 2.3 Feature of rain sensor.....                         | 2           |
| <b>3. Set up guide.....</b>                             | <b>2</b>    |
| 3.1 Battery install.....                                | 2           |
| 3.2 Mounting.....                                       | 4           |
| <b>4. LCD overview.....</b>                             | <b>5</b>    |
| 4.1 LCD overview.....                                   | 5           |
| 4.2 Weather forecast.....                               | 6           |
| 4.3 Weather forecast tendency indicator.....            | 6           |
| 4.4 Storm warning indicator.....                        | 6           |
| <b>5. Program modes.....</b>                            | <b>7</b>    |
| 5.1 Quick display mode.....                             | 7           |
| 5.2 Setting mode.....                                   | 7           |
| 5.3 History mode.....                                   | 7           |
| 5.4 Alarm mode.....                                     | 8           |
| 5.5 Min/Max mode.....                                   | 9           |
| <b>6. Problems and interference with operation.....</b> | <b>9</b>    |
| <b>7. Specification.....</b>                            | <b>10</b>   |

*This Operation Manual is part of this product and should be kept in a safe place for future reference. It contains important notes on setup and operation.*

## 1. Introduction

Thank you for purchasing this Professional Weather Center Designed for everyday use, the weather station will prove to be an asset of great value for your personal use in the home or office. Please read this instruction manual thoroughly to fully understand the correct operation of your weather station and benefit from its unique features.

## 2. Inventory of contents

- 1) Base station
- 2) WH1 sensor including thermo-hygro sensor, rain sensor, wind sensor, radio controlled time receiver
- 3) Instruction manual
- 4) 2 adjustable hoops (to fix the mast to your desired location)

The received data is continuously updated to bring you the latest weather information on the base station's LCD. The outdoor thermo-hygro sensors is the main data communication unit since both the wind and rain sensors are connected the thermo-hygro sensor for operating power and rely on it to communicate to the base station. Weather and Radio controlled time data sent from the thermo-hygro sensor is transmitted by wireless transmission at 433MHZ frequency.

### Additional equipment

(not included)

1. 3 Fresh AA 1.5V LR6 Alkaline batteries.
2. 2 Fresh AA 1.5V LR6 Alkaline batteries.

### 2.1 Feature of the base station:

- Indoor and outdoor temperature display in degrees Fahrenheit or Celsius (user selectable)
- Indoor and outdoor relative humidity displays
- Barometric pressure reading in inHg or hPa, absolute or relative (user selectable)
- Detailed display of rainfall data in 1 hour, 24 hours, one week, one month and total since last reset. (user selectable in mm or inch)
- Wind speed in mph, km/h, m/s, knots or Beaufort (user selectable)
- Wind chill temperature display
- Dew point temperature display
- Weather forecast display by weather icons (sunny, cloudy, rainy)
- Weather forecast tendency arrow
- Storm warning alarm
- Display of extensive weather data, in all cases with programmable alarm functions for certain weather conditions as well as records of all minimum and maximum values along with time and date of their recordings
- LED back light
- WWVB radio controlled time and date with manual setting option
- 12 or 24 hour time display
- Perpetual calendar
- Time zone setting
- Daylight saving time manual setting on/off (met latest DST activating time)
- Wall hanging or free standing
- Synchronized instant reception

### 2.2 Features of wind sensor

The wind sensor measures wind speed and sends the data to thermo-hygro sensor, which in turn transmits the data to the base station.

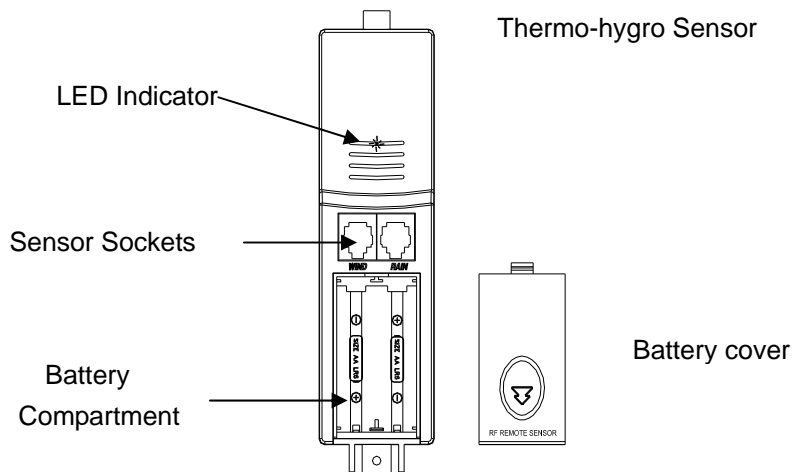
### 2.3 Feature of rain sensor

The rain sensor measures the rainfall and sends the data to thermo-hygro sensor, which in turn transmits the data to the base station. Operating power is taken from the thermo-hygro sensor by a cable connection

## 3. Set up Guide

### 3.1 Battery install

Setting up using batteries:



**Note: To avoid operating problems, please take note of battery polarity before/when inserting any Alkaline Batteries (permanent damaged could be introduced by inserting the battery in wrong direction). Use good quality Alkaline Batteries and avoid rechargeable batteries.**

- 1) Pull away the shower proof casing of the thermo-hygro sensor to reveal the two sockets (for the wind sensor and rain sensor)
- 2) Connect the attached cables of wind and rain sensors to the corresponding sockets of the thermo-hygro sensor by clicking them into place. Make sure that rain and wind sockets not swapped when plugging the phone jacket.
- 3) Open the base station's battery cover located at the back of the unit and insert 3 x AA, 1.5V Alkaline batteries into the battery compartment and close the battery cover
- 4) Open the battery cover of the thermo-hygro sensor located below the two sockets and insert 2 x AA, 1.5V Alkaline batteries and close the cover

Every time the thermo-hygro sensor is powered up (for example after a change of batteries), the LED indicator will light up for 4 seconds. The sensor will transmit weather data within the first 24s, and then the sensor will start radio controlled time reception. During the RCC time reception period (maximum 5 minutes), no weather data will be transmitted. The LED indicator will be blinking 5 times once RCC signal were received. The LED indicator will not light again after RCC reception is successful. Regular RF link will be established once RCC reception routine is finished.

When the base station is powered up, a short beep will sound and all LCD segments will light up for about 3 seconds before it enters into learning mode to learn the sensors security code. After the learning mode the base station will start the radio controlled time reception.

**Note: DO NOT PRESS ANY KEY** during the first 10 minutes learning period or before radio controlled time is displayed. After both outdoor weather data and radio controlled time are displayed you can place your remote sensor outdoors and set your time (if no RCC reception is possible). If there is no temperature reading in the indoor station, make sure the units are within range of each other or repeat the battery installation procedure. If a key is pressed before the weather station receives the temperature signal, you will need to follow the battery installation procedure again. **Please wait minimum 10seconds before re-insert the battery again to make a proper reset for both transmitter and receiver..**

**Note :** If a battery change on the transmitter side happened, the base station will be resynchronized to the transmitter within the next 3 hours. If you want to shorten the receiving data time, the base station has to re-install the battery so that it can have the new security code learnt right way, however the previous data in base station will be lost.

**Note for Radio Controlled Time WWVB:**

The time and date display is based on the signal provided by the highly accurate government operated atomic clock. WWVB signal reception is on every even hour even the reception is successful. If reception has been successful, the received time and date will overwrite the manually set time and date.

**Note:**



When batteries require replacement for the base station, the low battery indicator will light up on the LCD.

**Please participate in the preservation of the environment by properly disposing of all used-up batteries and accumulators at designated disposal points. Never dispose of batteries in a fire as this may cause explosion, risk of fire or leakage of dangerous chemicals and fumes**

### 3.2 Mounting

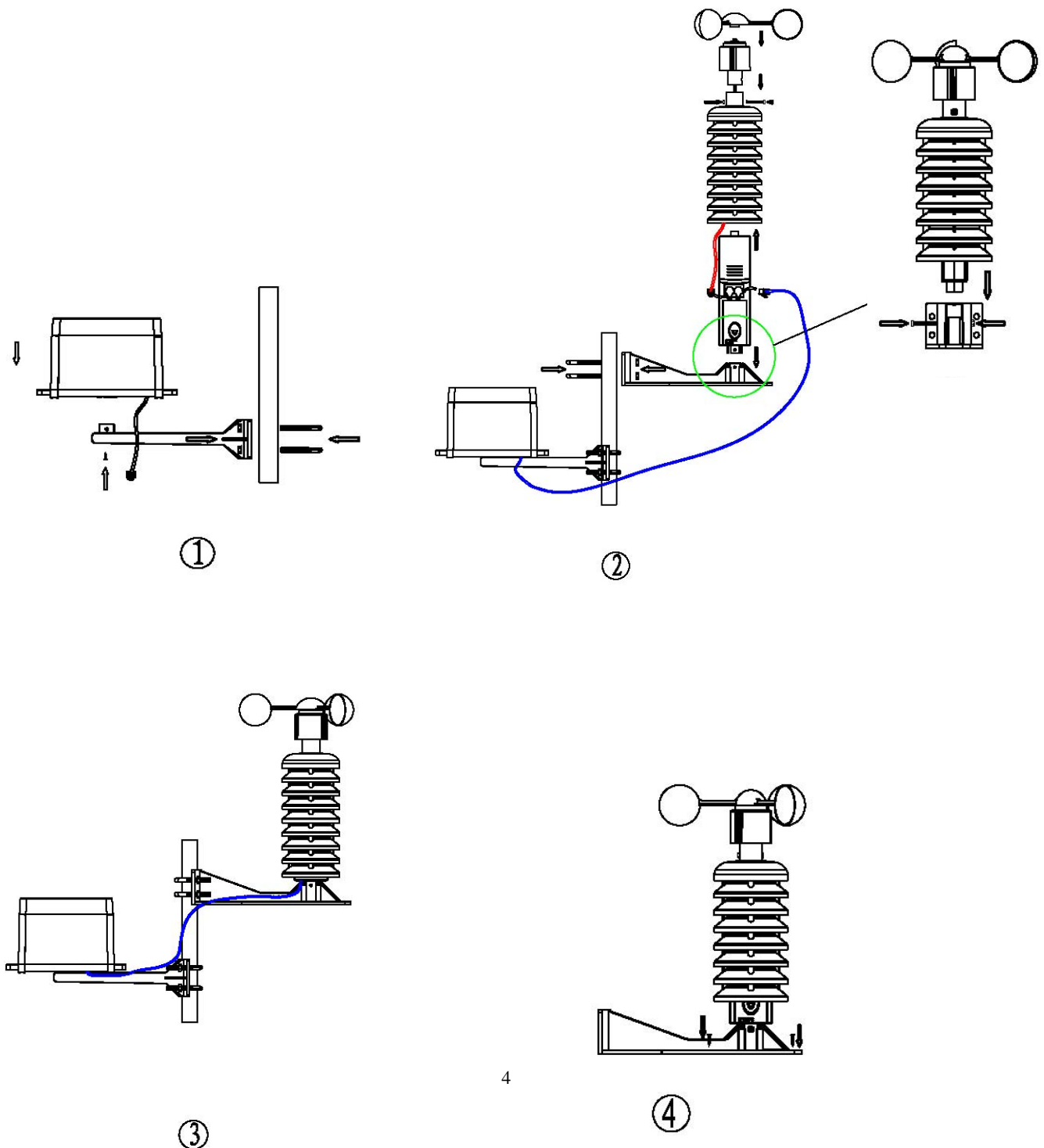
#### 1) Base station

With one foldable leg at the back of the unit, the base station can be placed onto any flat surface or wall mounted at the desired location by the hanging holes also at the back of the unit. It is important to check that the radio signal can be received before permanently mounting any of the units

#### 2) Remote sensor

There are two mounting methods available for the transmitter.

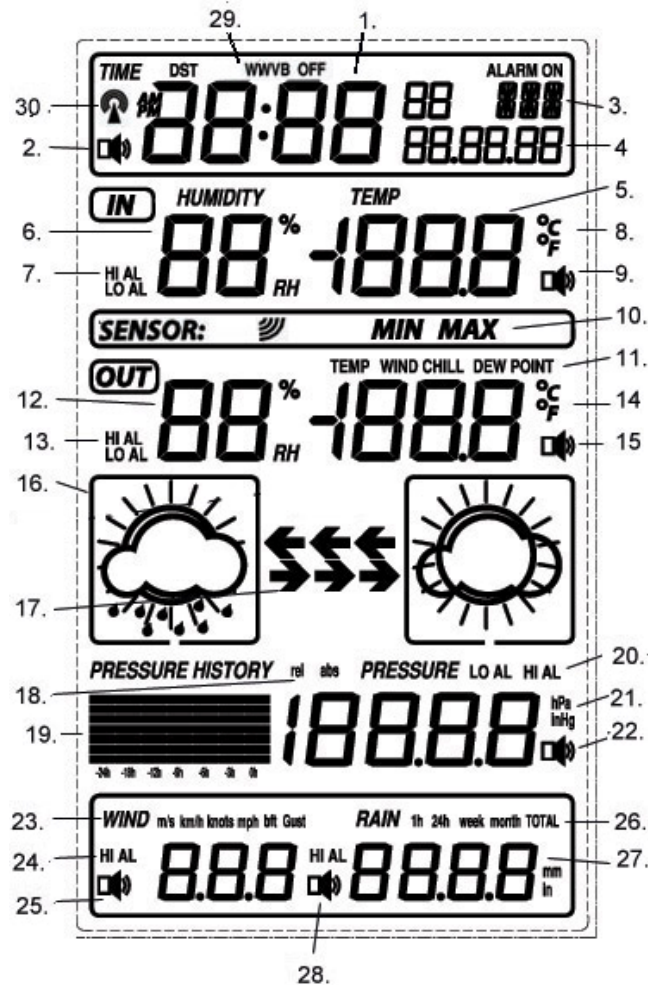
To mount the transmitter to a pole, follow steps 1, 2, and 3. To mount the transmitter to a flat surface follow steps 1, 2, and 4.



## 4. LCD overview

### 4.1 LCD overview

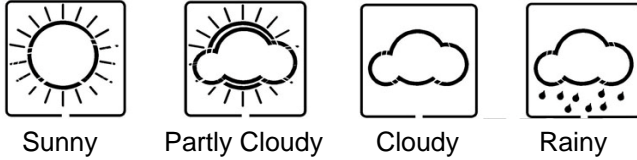
The following illustration shows the full segments of the LCD for description purposes only and will not appear like this during normal operation and use.



- |   |  |
|---|--|
| 1. Time   | 16. Weather forecast icon                                      |
| 2. Alarm on indicator                                       | 17. Weather tendency indicator                                 |
| 3. Day of week/ time zone                                   | 18. Pressure unit (relative or absolute)                       |
| 4. Date   | 19. Pressure with 24 hour history graph                        |
| 5. Indoor temperature display                               | 20. Pressure low alarm and high alarm                          |
| 6. Indoor humidity display                                  | 21. Pressure display unit (inHg or hPa)                        |
| 7. Indoor temperature and humidity low alarm and high alarm | 22. Pressure alarm on indicator                                |
| 8. Temperature display unit                                 | 23. Wind speed display unit (m/s, km/h, knots, chill mph, bft) |
| 9. General indoor alarm icon                                | 24. Wind speed high alarm                                      |
| 10. MIN/MAX information                                     | 25. Wind alarm on indicator                                    |
| 11. Wind chill and dew point temperature display            | 26. Rainfall display unit (mm/in)                              |
| 12. Outdoor temperature and humidity display                | 27. Rainfall 1h, 24h, week, month or total hour                |

- 13. Outdoor temperature and humidity low alarm display
- 14. Temperature display unit
- 15. General outdoor alarm icon
- 28. Rainfall alarm on indicator
- 29. Radio controlled time version WWVB
- 30. Radio controlled time icon

**4.2 Weather forecasting**



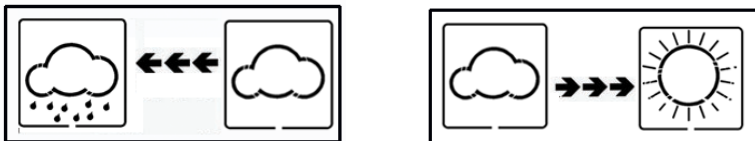
The four weather icons Sunny, partly Cloudy, Cloudy and Rainy represent the weather forecasting. For every sudden or significant change in air pressure, the weather icons will update accordingly to represent the change in weather.

**4.3 Weather forecast tendency indicator**

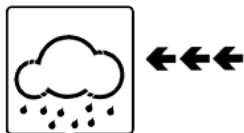
The weather tendency indicators arrow is located between the weather icons to show the air pressure tendency and provide a forecast of the weather to be expected by the decreasing or increasing air pressure. The rightward arrow means that the air pressure is increasing and the weather is expected to become better. The leftward arrow means that the air pressure is decreasing and the weather is expected to become worse.

The change of weather forecast icon is in accord to the relationship between current relative pressure and the pressure change since last three hours. If the weather is changing, weather tendency indicator (animated arrows) will be flashing. And then the arrows will fix while weather conditions have become stably.

**Examples of changing weather icons:**



**4.4 Storm warning indicator**



The storm threshold can be set to suit the user's requirement for storm forecasting from level 3-9 (default level 3). When there is a fall over pressure threshold in 3 hours, the storm forecasting will be activated, the clouds with rain icon and tendency arrows will flash for 3 hours indicating the storm warning feature has been activated.

**Notes to pressure sensitivity setting for weather forecasting:**

The pressure threshold can be set to suit the user's requirement for weather forecasting from level 2-4 (default level 3). The lower level pressure threshold setting, the higher sensitivity for weather forecasting. For areas that experience frequent changes in air pressure requires a higher setting compared to an area where the air pressure is stagnant.

**5. Program Mode**

The base station has five keys for easy operation: **SET** key, **+** key, **ALARM** key, **HISTORY** key and **MIN/MAX** key. And there are five program modes available: Quick Display Mode, Setting Mode, Alarm Mode, History Mode and Min/Max Mode.

The program mode can be exited at any time by either pressing the **HISTORY** key, or waiting for the 30-second time-out to take effect.

## 5.1 Quick Display Mode

- While in Normal Mode, press the **SET** key to enter the Quick Display Mode as follow:
  1. Outdoor Temperature / Wind chill / Dew point (press the **+** key or **MIN/MAX** key shifts the display between outdoor temperature, wind chill and dew point)
  2. Absolute pressure / Relative pressure (press the **+** key or **MIN/MAX** key shifts the display between the absolute pressure and relative pressure)
  3. Wind speed / Gust speed (press the **+** key or **MIN/MAX** key shifts the display between the wind speed and gust speed)
  4. 1 hour/ 24 hour / week/ month / total rainfall quantity (press the **+** key or **MIN/MAX** key shifts the display between the selectable rainfall quantities), while display the rainfall total quantity, pressing the **SET** key for 2s will reset the rainfall total value to zero and the time recording to current time.
- Press the **SET** key to accept the change and advance to the next display mode. Continue to press the **SET** key to toggle through the display mode until return to the normal Mode

## 5.2 Setting Modes

- Press the **SET** key for 3 second while in normal mode to enter the normal Setting mode
- Press the **SET** key to select the following setting in sequence :
  1. Time Zone Setting
  2. DST on/off
  3. 12/24 hour format
  4. Manual time setting (hours/minutes)
  5. Calendar setting(year/month /date)
  6. Temperature display unit degree Celsius or Fahrenheit
  7. Air pressure display units in hPa or inHg
  8. Relative pressure setting from 27.13inHg – 31.89inHg (default 29.93inHg)
  9. Pressure threshold setting (default 3)
  10. Storm threshold setting (default 5)
  11. Wind speed and gust display units in km/h, mph, m/s, knots, bft
  12. Rainfall display units in mm or inch
- In the setting modes, press **+** key or **MIN/MAX** key change or scrolls the value. Holding the **+** key or **MIN/MAX** key for 3 second will increase/decrease digits in great steps.
- Press **HISTORY** key or key idle 30 second, the setting mode will return to Normal Mode

**Note:** Please set the units firstly before change units' value. During change of units setting, units' value will change according to new units but it might cause resolution loss due to its internal calculation algorithm.

**Note:** "DST OFF" indicates that the feature is off and the internal real time clock will not change times automatically. "DST ON" indicates that the feature is on and the internal real time clock will change times according to the DST time schedule automatically. Some locations (Arizona and parts of Indiana) do not follow Daylight Saving Time, and should select "DST OFF".

## 5.3 History Modes

- While in Normal Mode, press the **HISTORY** key to enter the History Mode.
- In the History Mode, press the **+** key to select the record over the past 24hours at increments of -3 hours, -6 hours, -9 hours, -12 hours, -15 hours, -18 hours, -21 hours, -24 hours
- Press the **HISTORY** key or key idle 30 second to return to Normal Mode

## 5.4 Alarm Modes

- While in Normal Mode press the **ALARM** key to enter the High Alarm Mode
  - Press the **ALARM** key again to enter Low Alarm mode
- Remark:** after the initial pressing of **ALARM** key, the display will be refreshed to show current high, low alarm values. Normal alarm value will be displayed only for those already activated, all other not activated values will be displayed with "--" or "- -" instead.
- Press the **ALARM** key again to return the Normal Mode
  - In the High Alarm Mode press the **SET** key to select the following alarm modes:

1. Time alarm (hour/minute)
  2. Indoor humidity high alarm
  3. Indoor temperature high alarm
  4. Outdoor humidity high alarm
  5. Outdoor temperature high alarm
  6. Wind chill high alarm
  7. Dew point high alarm
  8. Pressure high alarm
  9. Wind speed high alarm
  10. Gust speed high alarm
  11. 1Hour rain high alarm
  12. 24 hour rain high alarm
- In the Low Alarm Mode press the **SET** key to select the following alarm modes:
    1. Time alarm (hour/minute)
    2. Indoor humidity low alarm
    3. Indoor temperature low alarm
    4. Outdoor humidity low alarm
    5. Outdoor temperature low alarm
    6. Wind chill low alarm
    7. Dew point low alarm
    8. Pressure low alarm
  - In the alarm modes, Press **+** key or **MIN/MAX** key change or scrolls the alarm value. Hold the **+** key or **MIN/MAX** key for 3 second to change the number in great step. Press the **ALARM** key to choose the alarm on or off (if alarm is enabled, the speaker icon on the LCD will be turned on indicating the alarm function has been enabled). Press the **SET** key to toggle through each alarm mode until it returns to the normal display mode.
  - Press **HISTORY** key or key idle 10 second at any time, the alarm mode will return to Normal Mode

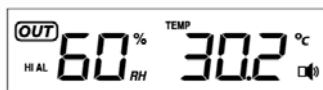
### Canceling the Temperature Alarm While Sounding

- a. When a set weather alarm condition has been triggered, that particular alarm will sound for 120 second and flash until the weather condition doesn't meet the user set level. Press any key to mute the alarm, but the triggered source will continue to flash until weather conditions have become more steady. This feature is useful to avoid repeated triggering for the same alarm value.
- b. The alarm will reactivate automatically once the value has fallen below the set value.

### The outdoor weather alarm

When a set outdoor weather alarm has been triggered, it will flash on the LCD display and the general outdoor alarm icon and high/low alarm icon will flash accordingly. For example, in outdoor temperature display mode, when dew point high alarm is triggered **DEW POINT** icon will flash along with general outdoor alarm icon and high alarm icon flashing, telling that the current alarm source is from dew point. This is easier for you to tell the triggering source for current alarm.

Temperature display mode



Dew point high alarm was triggered



### 5.5 Min/Max Mode

- While in Normal Mode, press the **MIN/MAX** key to enter the maximum mode,
- Press **MIN/MAX** key again to enter the minimum mode
- Press **MIN/MAX** key again to return the Normal Mode
- In the maximum reading Mode, press the **+** key to display the following maximum values together with the time and date stamp when these values were recorded, if press **SET** key in the following individual maximum value will be reset to current reading together with the current time and date.
  1. Indoor humidity maximum
  2. Indoor temperature maximum
  3. Outdoor humidity maximum
  4. Outdoor temperature maximum
  5. Wind chill temperature maximum
  6. Dew point temperature maximum



7. Pressure maximum
  8. Wind speed maximum
  9. Gust speed maximum
  10. 1Hour rain maximum
  11. 24 hour rain maximum
  12. Week rainfall maximum
  13. Month rainfall maximum
- In the minimum reading Mode, press the **+** key to display the following minimum values together with the time and date at which these values were recorded, if press **SET** key in the following individual minimum value will be reset to current reading together with the current time and date.
    1. Indoor humidity minimum
    2. Indoor temperature minimum
    3. Outdoor humidity minimum
    4. Outdoor temperature minimum
    5. Wind chill temperature minimum
    6. Dew point temperature minimum
    7. Pressure minimum
  - Press the **HISTORY** key or key idle 10 second, the Min/Max mode will return to Normal Mode

## 6. Problems and interference with operation

| Problem & cause   | Remedy  |
|---|---|
| Distance between transmitters and receiver too long   | Reduce distance between transmitters and receiver to receive signal   |
| High shielding materials between the units (thick walls, steel, concrete, isolating aluminum foil and etc.)   | Find a different location for sensors and/or receiver. See also item 'transmission range' below   |
| Interference from other sources (e.g. wireless radio, headset, speaker, etc. operating on the same frequency) | Find a different location for the sensors and/or base station. Neighbors using electrical devices operation on the same signal frequency can also cause interference with reception |
| No reception after adding extension cables  | Find a new location for the sensors and/or base station.  |
| Poor contrast LCD or no reception or low batteries in sensors or receiver                                     | Change batteries  |
| Temperature, humidity, or air pressure is incorrect.  | Check/replace batteries. Move away from sources of heat/cold. Adjust relative air pressure to a value from a reliable source (TV radio, etc.).                                      |

## 7. Specifications

### Outdoor data

|                                       |  |
|---------------------------------------|--|
| Transmission distance in open field : | 600 feet   |
| Frequency :                           | 433.92MHz  |
| Temperature range :                   | -22 °F to +149 °F (show OFL if outside range)                    |
| Resolution :                          | 0.1 °F   |
| Measuring range rel. humidity :       | 10%~99%  |
| Rain volume display :                 | 0 – 9999mm (show OFL if outside range)                           |
| Resolution :                          | 0.1mm (if rain volume < 1000mm)<br>1mm (if rain volume > 1000mm) |
| Wind speed :                          | 0~100mph (show OFL if outside range)                             |

Measuring interval thermo-hygro sensor : 48 sec  
Water proof level : IPX3

#### **Indoor data**

Measuring interval pressure / temperature : 48 sec  
Indoor temperature range : 32 °F to + 140 °F (show OFL if outside range)  
Resolution : 0.1 °F  
Measuring range rel. humidity : 10%~99%  
Resolution : 1%  
Measuring range air pressure : 300-1100hPa (8.85-32.5inHg)  
Accuracy : +/-3hpa under 700-1100hPa  
Resolution : 0.1hPa (0.01inHg)  
Alarm duration : 120 sec

#### **Power consumption**

**Base station** : 3XAA 1.5V LR6 Alkaline batteries  
Remote sensor : 2xAA 1.5V LR6 Alkaline batteries  
Battery life : Minimum 12 months for base station  
Minimum 24 months for thermo-hygro sensor

#### **FCC Statement**

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

#### **Caution!**

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.