



## Professional Rain Gauge with Thermo-Hygro and RC Clock



C8437&C3101

### USER MANUAL

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### PRECAUTIONS

- Read and keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not subject the unit to excessive force, shock, dust, temperature or humidity.
- Do not cover the ventilation holes with any items such as newspapers, curtains etc.
- Do not immerse the unit in water. If you spill liquid over it, dry it immediately with a soft, lint-free cloth.
- Do not clean the unit with abrasive or corrosive materials.
- Do not tamper with the unit's internal components. This invalidates the warranty.
- Only use fresh batteries. Do not mix new and old batteries.
- Only use attachments / accessories specified by the manufacturer.
- Images shown in this manual may differ from the actual display.
- When disposing of this product, ensure it is collected separately for special treatment.
- Placement of this product on certain types of wood may result in damage to its finishing for which manufacture will not be responsible. Consult the furniture manufacturer's care instructions for information.
- The contents of this manual may not be reproduced without the permission of the manufacturer.
- When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer that have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- Do not dispose old batteries as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

- Please note that some units are equipped with a battery safety strip. Remove the strip from the battery compartment before first use.
- The technical specifications for this product and the contents of the user manual are subject to change without notice.
- Operating temperature: -10° to 50°
- **CAUTION:** Risk of explosion if the battery is replaced by an incorrect type.
- High or low extreme temperatures that a battery cannot be subjected to during use, storage or transportation and low air pressure at high altitude.
- Replacement of a battery with an incorrect type that can defeat a safeguard.
- Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion.
- Leaving battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas.
- A battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas.
- An appliance is only suitable for mounting at height  $\leq 2\text{m}$ .

## **FCC STATEMENT**

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.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital 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 Industry Canada License-exempt RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

## **INTRODUCTION**

Thank you for selecting the Professional Rain Gauge Sensor.

The device contains a wireless self-emptying rain collector for measuring rainfall and temperature, and a Display Main Unit. The wireless rain collector sensor is fully assembled and calibrated for your easy installation. It transmits data by a low power radio frequency to the Display Main Unit up to 150m away (line of sight).

The Display Main Unit displays the rainfall and temperature data received from the sensor outside. It remembers the data over a time range for you to monitor and analyze the weather status for past 24 hours. It has advance features such as the HI/LO Alert alarm which will alert the user when the set high or low weather criteria are met. Time and date stamps are also provided to the corresponding maximum and minimum records for each weather details.

The system also analyze the records for your convenient viewing, such as the display of total rainfall as well as indications in terms of rain rate, hourly, daily, weekly, monthly and yearly records. With Radio-controlled / Atomic clock feature built-in, the system is truly a remarkable personal Professional Rain Gauge for your own backyard.

### ***NOTE:***

This instruction manual contains useful information on the proper use of this product. Please read this manual through to fully understand and enjoy its features.

## **PRODUCT FEATURES**

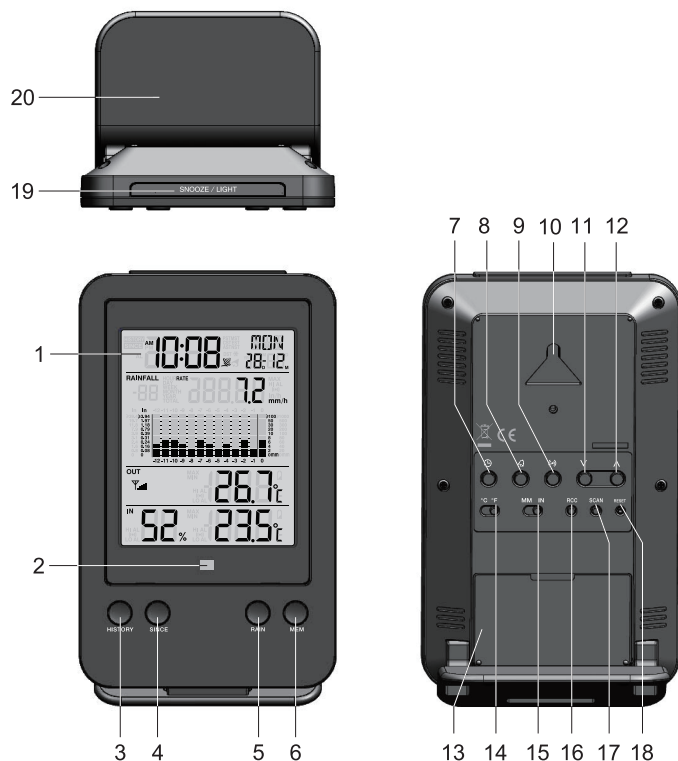
- Large backlit LCD display unit
- Hourly rain rate display
- Total Hourly, Daily, Weekly, Monthly and Yearly rainfall display
- Data logger stores and gathered data to display rainfall according to your selected time-scale (current status, past 24 hours, past 31 days, past 52 weeks, past 12 months or past 5 years)
- Graphical histogram display to show variation of rainfall pattern in your selected time-scale (current status, past 12 hours, past 12 days, past 12 weeks, or past 12 months at a time)
- SINCE function to display TOTAL rainfall from a customized commencing date
- Measures outdoor temperature at the same time with indoor temperature and humidity
- Real time clock display with Atomic Radio Controlled function
- Up to 150 m (500 ft) sensor transmission range
- Data retention storage even during batteries changes
- High / Low Alert function
- Maximum / minimum memory function with time stamp
- Alarm function with ice-alert function

## **OVERVIEW**

### **Main Display Unit**

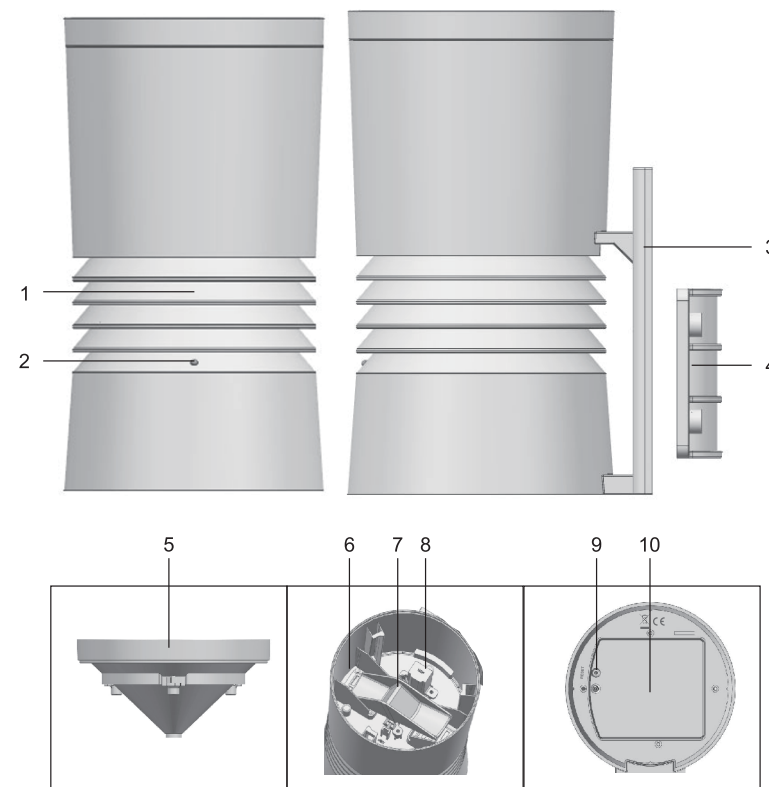
1. LCD display: Displays current rainfall, total rainfall or rainfall history, outdoor temperature, indoor temperature and humidity and clock/calendar

2. Alert indicator: blinking with alert alarm is on
3. **[ HISTORY ]**: toggle to display rainfall in the past hour, day, week, month or year
4. **[ TOTAL ]**: display total rainfall and the start day; hold to clear previous rainfall start time and reset the counter to start again
5. **[ RAIN ]**: toggle display mode to rainfall rate, hourly, daily, weekly, monthly, and yearly rainfall
6. **[ MEM ]**: to show maximum and minimum records with time stamps for temperature, humidity and rainfall
7. **[ CLOCK ]**: Press and hold to enter clock manual setting mode
8. **[ ALARM ]**: Press to on/off clock alarm or to enable or disable the hi/lo alert settings
9. **[ ALERT ]**: Press to review the hi/lo alert value
10. Wall mounting hole
11. **[ DOWN ]**: to decrease the current set value
12. **[ UP ]**: to increase the current set value
13. Battery compartment
14. °C/°F switch: change display in °C or °F
15. **MM/IN** switch: change to display in MM or IN
16. **RCC** button: press to enter RC reception mode
17. **SCAN**: press to search for the thermo-rain gauge sensor
18. **RESET**: restore factory settings
19. **[SNOOZE/LIGHT]**
20. Table stand



## Wireless Rain Gauge Sensor

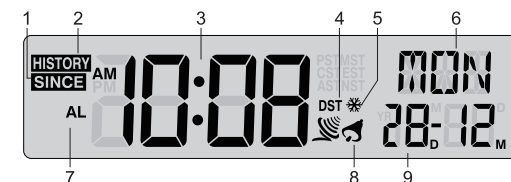
1. Radiation shield (Temperature sensor casing built inside)
2. Red LED indicator
3. Mounting base
4. Mounting claim
5. Rain collector
6. Drain holes
7. Tipping bucket
8. Rain sensor
9. **[ RESET ]** button
10. Battery door



## LCD DISPLAY

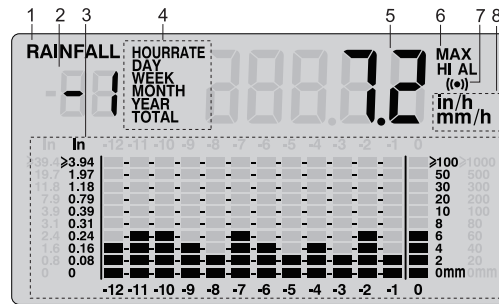
### Time and Calendar Display

1. **SINCE** icon: for total rainfall
2. **HISTORY** icon: for all past records
3. Time
4. **DST** icon: summer time
5. Ice pre-alert clock alarm
6. Day of the week
7. Alarm mode
8. Alarm icon
9. Calendar



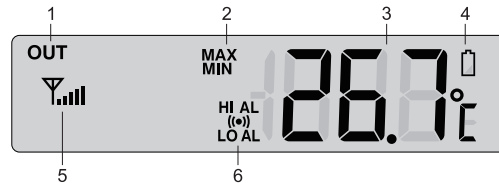
## Rainfall Display

1. Rainfall indicator
2. Past time
3. Histogram
4. Time range record indicator
5. Rainfall reading
6. MAX indicator
7. HI Alert and Alarm
8. Rainfall unit (in/h / mm/h)



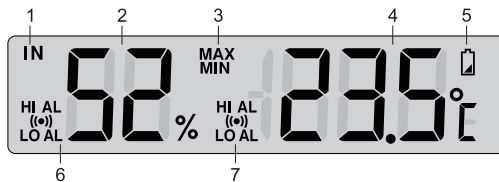
## Outdoor Temperature Display

1. OUT indicator
2. MAX/MIN indicator
3. Outdoor temperature
4. Low battery indicator for sensor
5. Outdoor signal strength indicator
6. HI / LO Alert and Alarm



## Indoor Temperature & Humidity Display

1. IN indicator
2. Indoor humidity
3. MAX/MIN indicator
4. Indoor temperature
5. Low battery indicator for main unit
6. HI / LO Alert and Alarm for humidity
7. HI / LO Alert and Alarm for temperature

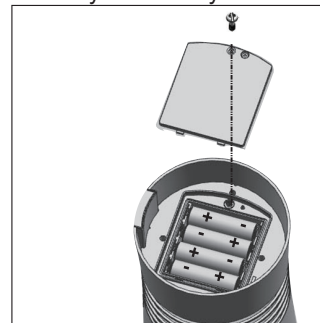


## INSTALLATION OF WIRELESS RAIN GAUGE SENSOR

Your wireless rain gauge sensor measures rainfall and temperature for you. It's fully assembled and calibrated for your easy installation.

### Battery and Installation

Unscrew the battery door at bottom of the unit and insert the batteries according to the “+/-” polarity indicated. Screw the battery door compartment on tightly. Press [ RESET ] button after each battery change.

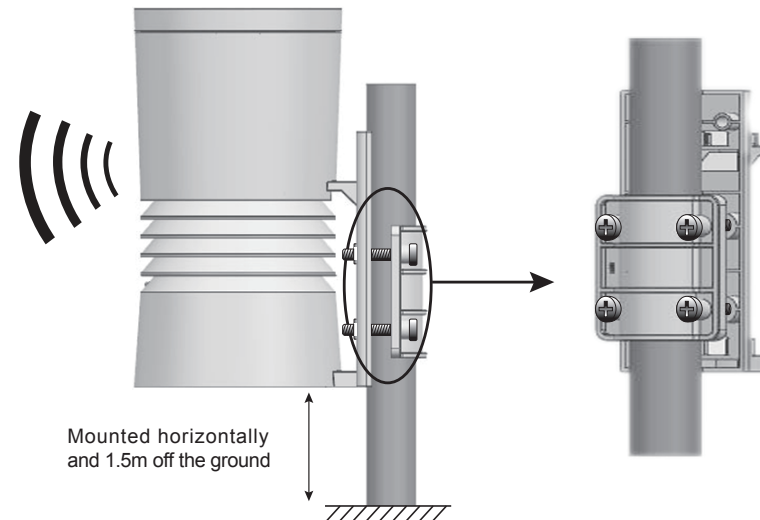
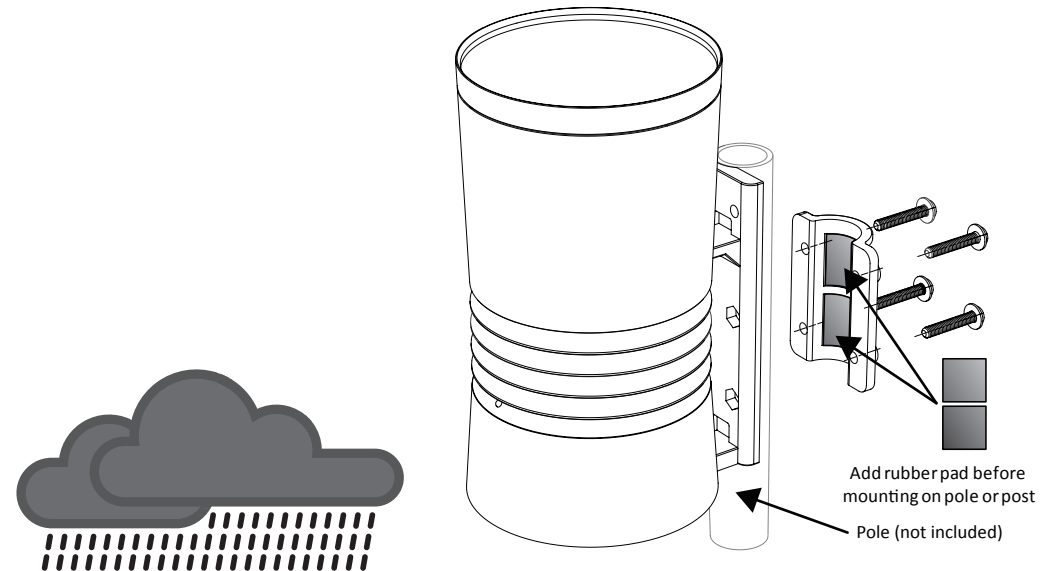


### NOTE:

The red LED will begin flashing every 12 seconds.

## Mounting Guidelines

1. Install the Thermo-Rain Gauge sensor in an open location with no obstructions above and around the sensor for accurate rain and temperature measurement.
2. Ensure the rain gauge is installed as level as possible to achieve accurate rain measurement.
3. The sensor and the main display unit should be positioned within an effective range of 100 m (329 ft) in an open area



## DISPLAY MAIN UNIT

### Stand and Batteries Installation

The unit is designed for desktop or wall mount for easy viewing.



1. Remove the battery door of the main unit.
2. Insert 2 new AA size batteries according to the "+/-" polarity mark on the battery compartment.
3. Replace the battery door.
4. Once the batteries are inserted, all the segments of the LCD will be briefly lighted up before entering automatic linking process with the remote sensor, as indicated by the flashing "Y".
5. Press the [ **SCAN** ] button if the "Y" is not flashing, to manually activate the linking process.
6. Press the [ **RESET** ] button at the bottom of the sensor. After successful linking with the sensor, the clock will automatically set its time by the Radio-controlled (RC) signal, as indicated by the "⌚" icon.

#### NOTE:

1. If no display appears on the LCD after inserting the batteries, press the [ **RESET** ] button by using a pointed object.
2. In some cases, you may not receive the RC signal immediately due to the atmospheric disturbance.

### Pairing of Wireless Sensor with Display Main Unit

After insertion of batteries, the Display Main Unit will automatically search and connect the wireless sensor (antenna blinking "Y").

Once the connection is successful, antenna mark "Y" and readings for outdoor temperature and rainfall will appear on the display.

### Changing Batteries of Thermo-Rain Gauge Sensor

Whenever you changed the batteries of the wireless sensor, pairing must be done manually.

1. Change the batteries to new ones.
2. Press the [ **RESET** ] button on the sensor.
3. Press the [ **SCAN** ] button on the Display Main Unit.

#### NOTE:

1. Pressing [ **RESET** ] button at bottom of the wireless sensor will generate a new code for pairing purpose.
2. Always dispose old batteries in an environmental safe manner.

## Radio-controlled / Atomic Clock Function

This main unit is programmed to synchronize with Radio-controlled time signal.

Version	Time signal	Signal broadcast
North American	WWVB(US)	Within 3200 km (2000 miles) of Fort, Collins, Colorado

The unit synchronizes itself automatically to the RC signal daily. The "⌚" icon will appear on the LCD upon successful synchronisation each time.

#### NOTE:

1. The strength of radio-controlled time signal from the transmitter tower may be affected by geographical location or building around.
2. Always place the unit away from interfering sources such as TV set, computer, etc.
3. Avoid placing the unit next to metal plates.
4. Closed areas such as airport, basement, tower block or factory are not recommended.

### Time Setting

The unit automatically set itself according to the Radio Controlled Clock signal it received. To set the clock/calendar manually in areas where reception of signal is not permitted, users may first disable the reception by holding the [ **RCC** ] button for 8 seconds until the "OFF" icon display on the clock.

### To Manually Set the Clock / Time Zone Selection

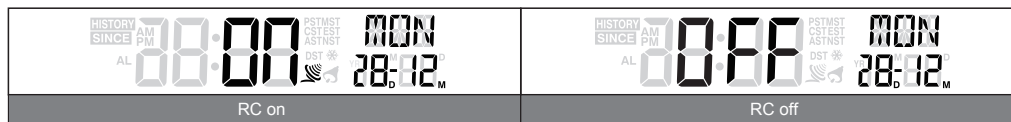
1. Press and hold [ **CLOCK** ] button for 2 seconds until "12 or 24 Hr" flashes.
2. Use [ **UP** ] / [ **DOWN** ] button to adjust, and press [ **CLOCK** ] button to proceed to the next setting.
3. Repeat 2 above for setting of **TIME ZONE, HOUR, MINUTE, YEAR, MONTH&DATE** or **DATE&MONTH, MONTH, DATE, HOUR OFFSET, LANGUAGE** and **DST**.

#### NOTE:

1. The unit will automatically exit setting if no key was pressed in 60 seconds.
2. Time zone setting is only for North American version where the unit receives **WWVB** signal. User can select **PST, MST, CST, EST, AST** or **NST**.
4. The language options are English (EN), French (FR), German (DE), Spanish (ES), Italian (IT), Dutch (NL) and Russian (RU).
5. DST (Daylight Saving Time) feature is set to Auto (factory set). The clock has been programmed to automatically adjust its time forward by one hour when the daylight saving time (DST) is in effect. User can set the DST to OFF to disable the feature.

## Disable / Enable RCC Signal Reception

1. Press and hold [ **RCC** ] button 8 seconds to disable the reception.
2. Press and hold [ **RCC** ] button 8 seconds to enable automatic RCC reception.



## To Turn on/off Alarm Clock (With Ice-alert Function)

1. Press the [ **ALARM** ] button any time to show the alarm time.
2. Press [ **ALARM** ] button to activate the alarm.
3. Press again to activate alarm with ice-alert function.
4. To disable the alarm, press until the alarm icon disappears.



## To Set the Alarm Time

1. Press and hold [ **ALARM** ] button for 2 seconds to enter alarm setting mode. HOUR will begin flashing.
2. Use [ **UP** ]/[ **DOWN** ] button to adjust HOUR, and press [ **ALARM** ] button to proceed to set MINUTE.
3. Repeat 2 above to set MINUTE, then press [ **ALARM** ] button to exit.

### NOTE:

1. Once the alarm time is set, alarm function will be activated automatically.
2. Pressing the [ **ALARM** ] button twice when alarm time is being displayed will activate the temperature-adjusted pre-alarm. The alarm will sound 30 minutes earlier if it detects outside temperature at below -3°C.

## RAINFALL

The device displays how many millimeters / inches of rainfall are accumulated over a time period, based on current rainfall rate that is updated every minute.

## To Select the Rainfall Display Mode

Press [ **RAIN** ] button to toggle between:

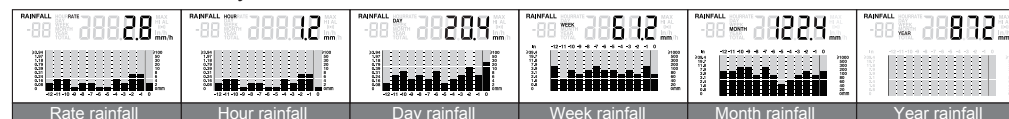
<b>RATE</b>		Current rainfall rate in past 60 minutes (e.g., 07:40~08:40)
<b>HOUR</b>		The HOUR display indicates the total rainfall for current hour (from the hour)
<b>DAY</b>		The DAY display indicates the total rainfall within a day (from midnight)
<b>WEEK</b>		The WEEK display indicates the total rainfall within a week (from midnight of Sunday)
<b>MONTH</b>		The MONTH display indicates the total rainfall within a month (from first day of the month)
<b>YEAR</b>		The YEAR display indicates the total rainfall within a year (from first day of the year)

### NOTE:

User can select the measurement unit for rainfall by sliding the [ **MM/IN** ] switch.

## Graphical Histogram Display

Histogram presents an easy view of rainfall change pattern over a period of time in a graphical manner. The time scale of the graph automatically changes according to the rainfall display modes: Rate → Hour → Day → Week → Month → Year



### NOTE:

1. By default, the graph is presented in Hourly scale when rainfall is in Rain Rate.
2. There is no graphical display when Yearly Rainfall is selected.



## Total Rainfall SINCE function

Press [ **SINCE** ] button to display the total rainfall record. The commencing date and year will be shown.

To clear the existing commencing date and reset it to re-start again, press and hold [ **SINCE** ] until the record is cleared. The total rainfall will now be equal to DAY rainfall of today and the unit will start again to collect the rainfall data.

## To Select the Measurement Unit for the Rainfall

1. Slide the [ **MM/IN** ] switch to <MM> position to select millimeter unit.
2. Slide the [ **MM/IN** ] switch to <IN> position to select inch unit.

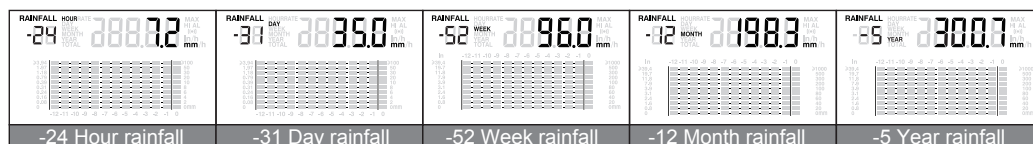
## HISTORY DATA OF ALL RECORD

Data logger stores and gathers data to display historical rainfall according to your selected time-scale (e.g. up to past 24 hours, past 31 days, past 52 weeks, past 12 months or past 5 years)

### To check history data:

1. Press [ **RAIN** ] button to select rainfall display modes.
2. Press the [ **HISTORY** ] button repeatedly to read the data for each period of time scale selected backward.

When HOUR time scale is selected, the LCD will display the past indoor temperature & humidity, outdoor temperature, for each hour on the hour simultaneously for the past 24 hours.



### NOTE:

The main unit can check the records according to the time and calendar of the clock, i.e. it can display the records of the past, but not any records in the future.

E.g. The main unit recorded data from Jan. 1st, 2012 to Feb. 31st, 2014. If the time is changed to Jan. 1st, 2013, then only data in 2012 can be displayed.

## TEMPERATURE & HUMIDITY DISPLAY

The Main Display Unit displays outdoor temperature received from the wireless Thermo-Rain Gauge sensor, as well as indoor temperature and humidity from the built-in sensors. User may select temperature unit by sliding the [ **°C / °F** ] switch.

## MAXIMUM / MINIMUM MEMORY FUNCTION

### To Check the Memory:

Press [ **MEM** ] button repeatedly to check the maximum/minimum records.

Area	Outdoor Temperature		Indoor Temperature		Indoor Humidity		Hour/Day/Week/ Month/Year rainfall
Type of memory	Max.	Min.	Max.	Min.	Max.	Min.	Max.

### NOTE:

When maximum or minimum reading is displayed, the corresponding time and date stamp will be shown.

### To Clear Individual Records

While displaying the maximum/minimum records, press and hold [ **MEM** ] button for 2 seconds to clear the individual record.

## HI / LO ALERT

HI/LO are used to alert the users of certain weather conditions. Once activated, the alarm will turn on and red LED starts flashing when a certain pre-set criterion is met. The following are areas and type of alert provided.

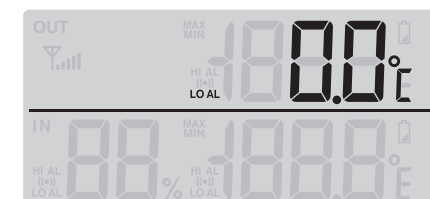
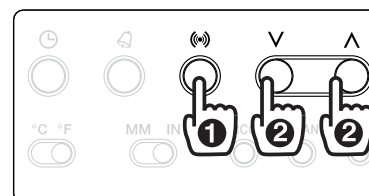
Area	Type of Alert available
Indoor temperature	HI and LO alert
Indoor humidity	HI and LO alert
Outdoor temperature	HI and LO alert
Hour rainfall	HI alert
Day rainfall	HI alert *

### NOTE:

\* Daily rainfall since midnight.

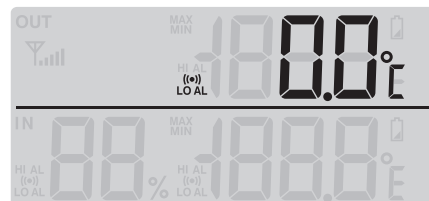
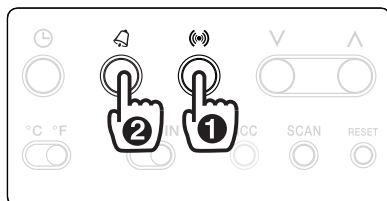
### To Set the HI / LO Alert

1. Press the [ **ALERT** ] button until the desired area is selected.
2. Use [ **UP** ] / [ **DOWN** ] buttons to adjust the setting.
3. Press [ **ALERT** ] button to confirm and continue to next setting.



## To Enable / Disable the HI / LO Alert

1. Press **[ ALERT ]** button until the desired area is selected.
2. Press **[ ALARM ]** button to turn the alert on or off.
3. Press **[ ALERT ]** button to continue to next setting.



### NOTE:

1. The unit will automatically exit setting mode in 5 seconds if no key is pressed.
2. When ALERT alarm is on, the alert LED indicator, the area and type of alarm that triggered the alarm will be flashing and the alarm will sound for 2 minutes.
3. To silence the Alert alarm beeping, press the **[ SNOOZE/LIGHT ]** button, or let the beeping alarm automatically turn off after 2 minutes.

## WIRELESS SIGNAL RECEPTION

No sensor	Signal searching	Strong signal	Weak signal	Signal lost

The wireless sensor is capable of transmitting data wirelessly over an approximate operating distance of 150m range (line of sight).

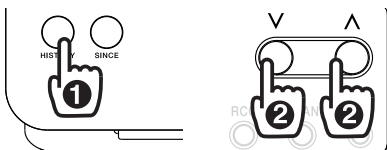
Occasionally, due to intermittent physical obstruction or other environment interference, the signal may be weakened or lost.

In the case that the sensor signal is lost completely, you will need to relocate the display main unit or the wireless sensor closer to each other.

## DATA CLEARING

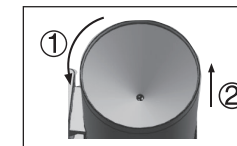
During installation of the wireless sensor, the sensor was likely to be triggered, resulting in erroneous rainfall measurements. After the installation, user may clear out all the erroneous data from the Display Main Unit, without needing to reset the clock and re-establish pairing.

1. Press and hold **[ HISTORY ]** button for 3 seconds.
2. Press **[ UP ]** or **[ DOWN ]** button to choose "YES" or "NO".
3. Press **[ HISTORY ]** button to confirm. This will clear out any rainfall data recorded before.



## MAINTENANCE OF RAIN GAUGE

1. Rotate the rain collector in anticlockwise direction.
2. Gently remove the rain collector.
3. Clean and remove any debris or insects.



## TROUBLESHOOTING

Problem / Symptom	Solution
Strange or no measurement of Rain Sensor	1. Check the drain hole in the rain collector. 2. Check the balance of the rain gauge.
Strange or no measurement of Thermo Sensor	1. Check the radiation shield. 2. Check the sensor casing.
display on the outdoor temperature display	1. Change new batteries to the rain gauge. 2. Relocate the main unit and sensor closer to each other.
and (Signal lost for 15 minutes)	3. Make sure the main unit is placed away from other electronic appliances that may interfere with the wireless communication (TVs, computers, microwaves).
and (Signal lost for 1 hour)	4. If problem continues, reset both main unit and the sensor.

## SPECIFICATIONS

MAIN UNIT	
Dimensions	95 x 155 x 23 mm (W x H x D)
Weight	212g without batteries
Battery	2 x AA size 1.5V batteries (Alkaline recommended)
Support channels	Wireless sensor (Rain gauge, thermo sensor)
INDOOR TEMPERATURE	
Temp. unit	°C or °F
Displayed range	-40°C to 70°C (-40°F to 158°F) (< -40°C: LO; > 70°C: HI)
Operating range	-10°C to 50°C (14°F to 122°F)
Resolution	0.1°C or 0.1°F
Accuracy	+/- 1°C or 2°F typical @ 25°C (77°F)
Display modes	Current, Min and Max, Historical data for past 24 hours
Memory modes	Max & Min from last memory reset (with time stamp)
Alarm	Hi / Lo Temperature Alert
INDOOR HUMIDITY	
Displayed range	20% to 90% RH (< 20%: LO; > 90%: HI) (Temperature between 0°C to 60°C)
Operating range	20% to 90%RH
Resolution	1%



Accuracy	±8%RH (20~39% RH) (@25°C) ±5%RH (40~70% RH) (@25°C) ±8%RH (71~90% RH) (@25°C)
Display modes	Current, Min and Max, Historical data for past 24 hours
Memory modes	Max & Min from last memory reset (with time stamp)
Alarm	Hi / Lo Humidity Alert
<b>RADIO-CONTROLLED / ATOMIC CLOCK</b>	
Synchronization	Auto or disabled
Clock display	HH:MM / Weekday
Hour format	12hr AM/PM or 24hr
Calendar	DD/MM/YR or MM/DD/YR
Weekday	7 languages: EN, FR, DE, ES, IT, NL, RU
Time signal	WWVB
Time zone	PST, MST, CST, EST, AST, NST
DST	AUTO / OFF
<b>WIRELESS SENSOR</b>	
Dimensions	109 x 200 x 109 mm (W x H x D)
Weight	372g without batteries
Battery	4 x AA size 1.5V battery (Lithium battery recommended)
Frequency	915 MHz
Transmission	Every 12 seconds
<b>OUTDOOR TEMPERATURE</b>	
Temp. unit	°C or °F
Displayed range	-40°C to 80°C (-40°F to 176°F) (< -40°C: LO; > 80°C: HI)
Operating range	-40°C to 60°C (-40°F to 140°F)
Resolution	0.1°C or 0.1°F
Accuracy	+/- 0.5°C or 1°F typical @ 25°C (77°F)
Display modes	Current, Min and Max, Historical data for past 24 hours
Memory modes	Max & Min from last memory reset (with time stamp)
Alarm	Hi / Lo Temperature Alert

RAIN GAUGE	
Unit for rainfall	in and mm
Range for rainfall	0~29999 mm (max)
Resolution	0.01" (0.254 mm)
Accuracy	< 0.01" (0.2 mm): +/- 7% or 1 tip; 5" (127 mm): +/- 7%
Display modes	Rainfall in hourly rate, hourly, daily, weekly, monthly and yearly
Memory modes	Maximum rain
Alarm	Hourly or Daily High rainfall alert
Hi display	Hour rainfall > 999.9 mm; Day rainfall > 9999 mm; Week/Month/Total rainfall > 29999 mm

