

# EM3551E-WWVB Manual

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## Features:

- ▶ WWVB Radio control time function
- ▶ Perpetual Calendar Up to Year 2099
- ▶ Time in 12-hour or 24-hour format
- ▶ Two daily alarms
- ▶ Automatic snooze function (OFF or 5~60min)
- ▶ Temperature:
  - Indoor temperature measurement ranges: 32°F (0°C) to 122°F (50°C)
  - Outdoor temperature measurement ranges: -40°C (-40°F) to 70°C (158°F)
  - Temperature alternatively in °F or °C
- ▶ Rain
  - Rain range: 0 to 393.6 inches (0 to 9999mm)
  - Rain alternatively in mm or inches
  - Rainfall Readings
  - 24 Hour Rainfall Alert and NOW Rainfall Alert (silent)
- ▶ Wireless Outdoor Sensor:
  - 433.92MHz RF transmitting frequency
  - 200 feet (60 meters) transmission range in an open area, not including walls or floors

## ▶ Power Supply:

Main Unit:

Battery: 2 x LR03 AAA 1.5V

Wireless Remote Sensor:

Battery: 2 x LR6 AA 1.5V

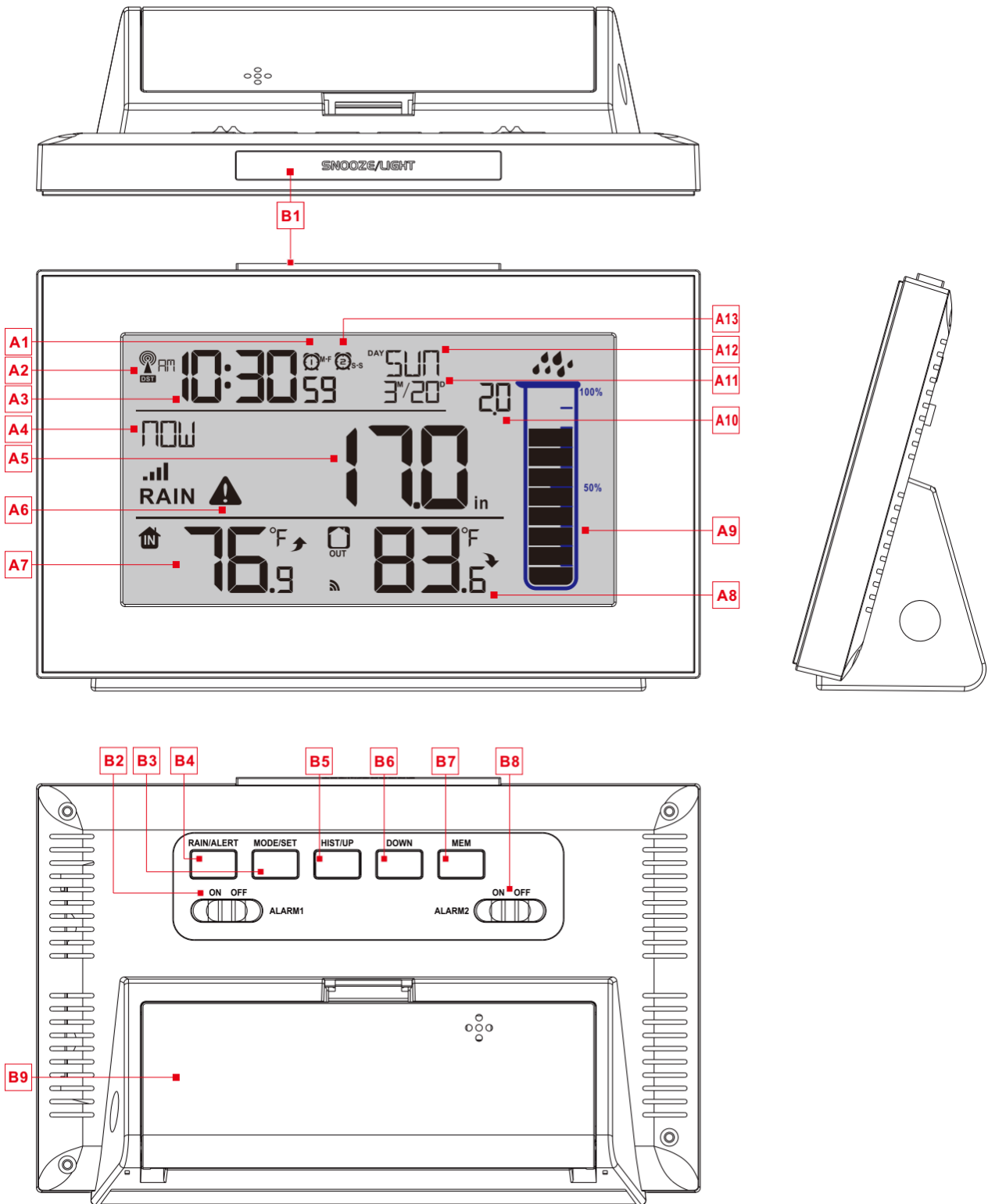
### ***F.Y.I.:***

The wireless remote sensor can work at -22°F to +158°F. Please choose the right battery according to the limit temperature of the wireless sensor:

Alkaline zinc manganese battery can work at -4°F to +140°F

Polymer lithium ion rechargeable battery can work at -40°F to +158°F

## Main Unit Appearance



### Part A-Positive LCD

- |                                 |   |
|---------------------------------|---|
| A1: Alarm1 icon                 | A2: WWVB signal icon and summer time icon |
| A3: Time                        | A4: Cumulative rainfall stage             |
| A5: Value of Rainfall           | A6: Rain alert icon                       |
| A7: Value of indoor temperature | A8: Value of outdoor temperature          |
| A9: Rainfall Cylinder Graph     | A10: Cup full rainfall value              |
| A11: Calendar                   | A12: Week                                 |
| A13: Alarm2 icon                |   |

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## Part B – Back button and power

B1: "SNOOZE/LIGHT" button

B2: "Alarm1 on/off" Switch

B3: "MODE/SET" button

B4: "RAIN/ALERT" button

B5: "HIST/UP" button

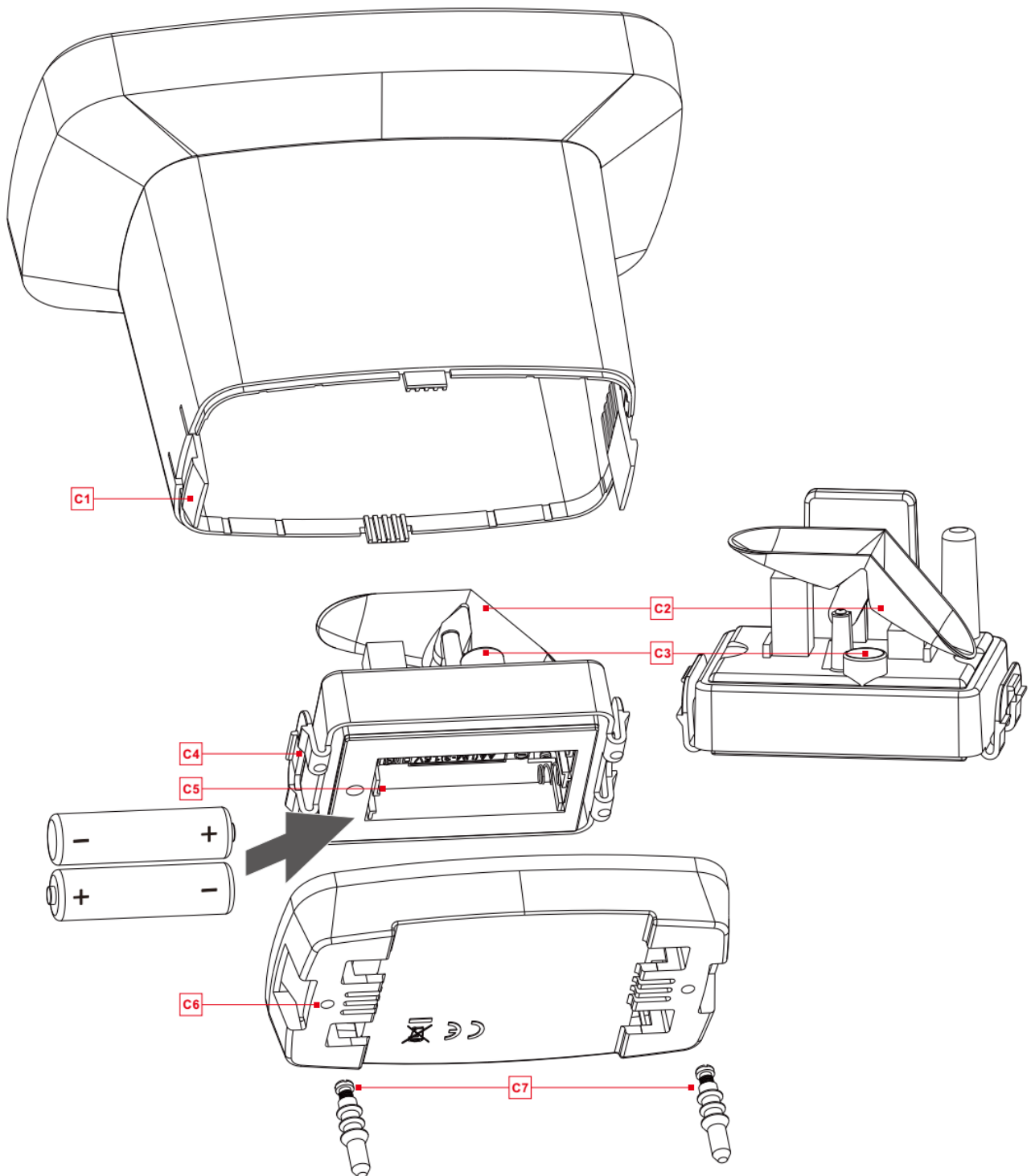
B6: "DOWN" button

B7: "MEM" button

B8: "Alarm2 on/off" Switch

B9: Battery compartment

## Sensor Appearance



## Part C –Wireless Remote Sensor:

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- C1: Funnel buckle
- C2: Rainfall measuring cup
- C3: Bubble Level
- C4: Sensor buckle
- C5: Battery compartment
- C6: Fixed hole
- C7: Fixed screw

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## Initial operation:

- ▶ Insert 2- AA batteries into the rain sensor according to polarity:
  1. Press the funnel's buckle (C1 position), pick up the funnel and you will see the internal rain sensor.
  2. Press the sensor's buckle (C4 position), pick up the rain sensor, and you will see the battery compartment below the rain sensor.
  3. Insert 2 AA batteries correctly according to the battery polarity of the battery compartment.
  4. The sensor back into the base, and let the buckle lock position.
- ▶ Open the battery cover of the main device (B9 position), and correctly load 2 AA batteries according to the battery polarity in the battery compartment.
- ▶ When you insert the batteries, all the icon on the LCD display will briefly light up for 3 seconds, and you will hear a beep tone, and detect indoor temperature.
- ▶ The main unit will now start to connect to the outdoor remote sensor. This operation will be completed in 3 minutes. When receiving the radio signal from the outdoor sensor, the radio signal icon will be displayed and flashing.
- ▶ In about 3 minutes, the main device will automatically receive the signal from the outdoor sensor. The rain value and the outdoor temperature value will be displayed on the LCD display, and the radio icon will not flash.
- ▶ After the master successfully receives the signal from the remote sensor, it will immediately exit the remote wireless receiving mode. Will automatically enter the WWVB's timing radio receiving mode.
- ▶ Wireless sensor mounting position:
  1. Before installing the fixed sensor, remove the cardboard around the rain bucket and the tape around the rocker. These are sensors used to protect against accidental movement during transportation.
  2. Mount your remote sensor in an open area for a more accurate rain count.
  3. Placing the remote sensor on the ground provides the most accurate rainfall measurement as there is no wind shear. Unfortunately, since insects think of remote sensors as personal hotels, placing your sensor 1-2 meters (3-6 feet) above ground may deter the insects.
  4. This is a self-emptying sensor, but be sure your unit is not sitting in a depression that would prevent rain from draining out of the bottom
  5. Your remote sensor should be accessible to allow for periodic cleaning of leaves or other debris that may clog the funnel.
  6. Install the remote sensor on a level platform that is stationary and has a direct line of sight to your station.
  7. Insert mounting screws through the holes in the base of the rain sensor. Do not over tighten.
  8. Use the bubble level (C3 position) inside your sensor to be sure it is level.
  9. After securing the base of the sensor, place the funnel section over the sensor and make sure the buckle is

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locked to the base.

10. Avoid other wireless rain sensors as this can cause inaccuracy due to signal interference.

▶ The rainforest structure of the sensor needs to be cleaned regularly (recommended cycle 1-3 months, depending on the frequency of rain):

1. Press the funnel's buckle (C1 position) and pick up the funnel.
2. Gently remove debris or insects from the rain sensor.
3. Remove debris from the rainwater funnel itself, especially debris from the funnel drain.
4. Remove the debris from the drain.
5. Reinstall the rainwater bucket.
6. Note: Do not apply oil to the rain sensor.

## Reception of the Radio signal:

- ▶ The clock automatically starts the **WWVB** signal search after 7 minutes of any restart or changing of new fresh batteries. The radio mast icon starts to flash.
- ▶ At 1:00 / 2:00 / 3:00, the clock automatically carries out the synchronization procedure with the **WWVB** signal to correct any deviations to the exact time. If this synchronization attempt is unsuccessful (the radio mast icon disappears from the display), the system will automatically attempt another synchronization at the next full one hour. This procedure is repeated automatically up to total 5 times.
- ▶ To start manual **WWVB** signal reception, press and hold down the "**DOWN**" button for two seconds. If no signals received within 7 minutes, then the **WWVB** signal search stops (the radio mast icon disappears) and start again at the next full one hour.
- ▶ During WWVB radio signal reception , to stop searching radio signal, press and hold down the "**DOWN**" button for two seconds.

F.Y.I.:

- ▶ A flashing radio mast icon indicates that the **WWVB F** signal reception has started
- ▶ A continuously displayed radio mast icon indicates that the **WWVB** signal was received successfully
- ▶ The symbol "**DST**" indicating the time of receipt for daylight saving time.
- ▶ We recommend a minimum distance of 2.5 meters 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 extreme circumstances, place the system close to the window.

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- ▶ During the WWVB radio reception mode, only the “**DOWN**” button function, other button operations can only turn on the backlight. If you want to perform other operation functions, press the “**DOWN**” button to exit the WWVB radio reception mode.

### Manual time setting:

- ▶ Press and hold down the “**MODE/SET**” button for 2 seconds, the unit of temperature display starts to flash. Now use the “**HIST/UP**” and “**DOWN**” button to set the temperature of the unit, the unit of temperature can be set to “°C” or “°F”
- ▶ Press “**MODE/SET**” to confirm your setting, the unit of rain display starts to flash. Now use the “**HIST/UP**” and “**DOWN**” button to set the rain of the unit, the unit of temperature can be set to “MM” or “INCHES”
- ▶ Press “**MODE/SET**” to confirm your setting, the RCC icon display starts to flash, now use “**HIST/UP**” and “**DOWN**” buttons set the RCC receive function to activate(ON) or close(OFF)
- ▶ Press “**MODE/SET**” to confirm your setting, the Time zones start to flash, now use “**HIST/UP**” and “**DOWN**” buttons set a correct time zone(PST MST CST EST AST HAT and AKT).
- ▶ Press “**MODE/SET**” to confirm your setting, the DST icon display starts to flash, now use “**HIST/UP**” and “**DOWN**” buttons set the DST function to activate(ON) or close(OFF)
- ▶ Press “**MODE/SET**” to confirm your setting, the 12-hour or 24-hour mode display starts to flash, now use “**HIST/UP**” and “**DOWN**” buttons to set the time displayed in 12-hour or 24-hour format
- ▶ Press “**MODE/SET**” to confirm your setting, the Hour display starts to flash, now use “**HIST/UP**” and “**DOWN**” buttons to set the correct hour.
- ▶ Press “**MODE/SET**” to confirm your setting, the Minute displays starts to flash, now use “**HIST/UP**” and “**DOWN**” buttons to set the correct minute.
- ▶ Press “**MODE/SET**” button to confirm your setting, the Month and Date icon display starts to flash. Now use “**HIST/UP**” and “**DOWN**” buttons to set the date display on Month/Date or Date/Month.
- ▶ Press “**MODE/SET**” button to confirm your setting, the Year display 2018 starts to flash, now use “**HIST/UP**” and “**DOWN**” buttons to set the correct year.
- ▶ Press “**MODE/SET**” button to confirm your setting, the Month display starts to flash, now use “**HIST/UP**” and “**DOWN**” buttons to set the correct month.
- ▶ Press “**MODE/SET**” button to confirm your setting, the Date display starts to flash. Now use “**HIST/UP**” and “**DOWN**” buttons to set the correct date.
- ▶ Press “**MODE/SET**” to confirm your setting and to end the setting procedures, enter the clock mode

### F.Y.I.:

- ▶ After 20 seconds without pressing any button, the clock switches automatically from Set Mode to Normal Time Mode.

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- ▶ In the set time, the number of minutes of the change, automatically from the zero second forward
  - ▶ In the set time, you can press hold the “**HIST/UP**” and “**DOWN**” button to quickly change the setting of the value
- ▶America time zone :

AST: Altantic Standard Time	-4
EST: Eastern Standard Time	-5
CST: Central Standard Time	-6
MST: Mountain Standard Time	-7
PST: Pacific Standard Time	-8
AKT: Alaska Standard Time	-9
HAT: Hawaii-Aleutian Standard Time	-10

- ▶ The time zone must be set correctly according to the main unit area, or when the time signal is received, the time will be incorrect
- ▶ When the Daylight saving time system is not implemented in this area, please set DST to OFF
- ▶ Exceeding the NIST radio station in Fort Collins, Colorado, USA, with a diameter of more than 1500 km, the signal received by the radio clock signal is very poor. It is recommended to set the RCC to OFF.

### Setting the daily alarms:

- ▶ Press “**MODE/SET**” button can switch the display ALARM1 time or ALARM2 time.
- ▶ In the display ALARM1 time or ALARM2 time mode, press and hold the “**MODE/SET**” button more than 2 seconds until Alarm 1 Time hour display of the Alarm 1 time starts to flash. Use the “**HIST/UP**” and “**DOWN**” buttons to set the required hour.
- ▶ Press “**MODE/SET**” button to confirm your setting, The Minute display of the Alarm 1 time starts to flash, use the “**HIST/UP**” and “**DOWN**” buttons to set the required minute.
- ▶ Press “**MODE/SET**” button to confirm your setting, The Repeat icon “M-F” of the Alarm 1 time starts to flash, use the “**HIST/UP**” and “**DOWN**” buttons to set the alarm repeat in “M-F” or “S-S” or “M-F” and “S-S”.
- ▶ Press “**MODE/SET**” button to confirm your setting, the snooze time of the Alarm1 starts to flash, use the “**HIST/UP**” and “**DOWN**” buttons to set the minute of snooze you need.
- ▶ Press “**MODE/SET**” button to confirm your setting, The Hour display of the Alarm 2 time starts to flash, use the “**HIST/UP**” and “**DOWN**” buttons to set the required hour.
- ▶ Press “**MODE/SET**” button to confirm your setting, The Minute display of the Alarm 2 time starts to flash, use the “**HIST/UP**” and “**DOWN**” buttons to set the required minute.
- ▶ Press “**MODE/SET**” button to confirm your setting, The Repeat icon “S-S” of the Alarm 2 time starts to flash, use the



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“**HIST/UP**” and “**DOWN**” buttons to set the alarm repeat in “M-F” or “S-S” or “M-F” and “S-S”.

- ▶ Press “**MODE/SET**” button to confirm your setting, the snooze time of the Alarm2 starts to flash, use the “**HIST/UP**” and “**DOWN**” buttons to set the minute of snooze you need.
- ▶ Press “**MODE/SET**” button to confirm your setting and to end the setting procedure.

### ***F.Y.I.:***

- ▶ After 20 seconds without pressing any button the clock switches automatically from setting mode to Normal clock mode.
- ▶ The alarm is repeatedly set to M-F, the alarm function will be activated from Monday to Friday, the Saturday and Sunday will be invalid. The alarm is repeatedly set to S-S, and the alarm function will be activated on Saturday and Sunday, and will expire from Monday to Friday. When the alarm is repeatedly set to display both M-F and S-S, the alarm function will be activated throughout the week.
- ▶ the snooze time setting range: 5 ~ 60MIN, OFF, when set to OFF, means no snooze function. Snooze time unit is minutes.

### **The alarm for opening and closing**

- ▶ The alarm 1 or alarm 2 shift switch is pushed in the “ON” position, LCD display the “” or “” icon, the alarm 1 or alarm 2 function is open
- ▶ Product back of the alarm shift switch is pushed in the “OFF” position, the “” or “” icon disappears, the alarm 1 or alarm 2 function is close

### ***F.Y.I.:***

- ▶ The alarm will sound for 1 minutes if you do not deactivate it by pressing any button. In this case the alarm will be repeated automatically after 24 hours.
- ▶ Rising alarm sound (crescendo, duration: 1 minutes) changes the volume 4 times whilst the alarm signal is heard.

### **Switching off the alarm signal**

- ▶ The alarm sound when the trigger, press any buttons except the “**SNOOZE/LIGHT**” button or press and hold the “**SNOOZE/LIGHT**” button for more than 2 seconds to stop the alarm signal.

### **Snooze function:**

- ▶ When the time is up to the alarm, press the “**SNOOZE/LIGHT**” button, the alarm signal stops, and enter the SNOOZE mode. After the snooze time is counted, the alarm will ring again.

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- ▶ In snooze mode, press any buttons except the “**SNOOZE/LIGHT**” button and hold for more than 2 seconds to exit the snooze mode.

## **F.Y.I.:**

When the snooze function is set to OFF, when the time is up to the alarm, press the “**SNOOZE/LIGHT**” icon position does not have this snooze function.

## **Wireless sensor transmission:**

- ▶ When the Main Unit successfully receives signals from the Wireless Sensor, the value of outdoor temperature and rainfall is displayed on the display of the main unit.
- ▶ If the Main Unit failed to receive transmission from outdoor sensor (“--” display on the LCD), press and hold “**HIST/UP**” button for 3 seconds to receive transmission manually. The display of the main unit will display the wireless receiving icon of the remote sensor and flash, and the Main Unit will reconnect the remote sensor.

## **F.Y.I.:**

- ▶ *When the main unit is not successfully connected to the wireless sensor, the value of outdoor temperature and rainfall on the main unit will display "--"*

## **Temperature Detection and temperature trend:**

- ▶ The current indoor temperature and the temperature trend (indoors) are shown in the LCD display.
- ▶ After successfully connecting with the remote sensor, the main unit can display the remote temperature and the temperature trend (remote)
- ▶ You may see the following displays:

: The temperature/humidity is rising.

: The temperature/humidity is falling.

No display: The temperature/humidity is remaining constant.

- ▶ Indoor temperature measuring range: 0°C (+32°F) ~ +50°C (+122°F), **LL.L** °C(°F) will displayed if value lower than 0C (+32°F), **HH.H** °C(°F) will displayed if value higher than +50°C (+122°F).
- ▶ Outdoor temperature measuring range: 40°C (-40°F) ~ +70°C (+158°F), **LL.L** °C(°F) will displayed if value lower than -40°C (-40°F), **HH.H** °C(°F) will displayed if value higher than +70°C (+158°F).

## **Maximum/Minimum Temperature**

- ▶ To toggle indoor/outdoor maximum, minimum temperature data, press the “MEM” button:

Once to show the maximum temperature values.

Twice to show the minimum temperature values

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Three times to return to the current temperature levels

- ▶ To reset the maximum and minimum temperature, press and hold down the “MEM” button about 2 seconds. This will reset all minimum and maximum data recorded to the current displayed values.

## ***F.Y.I.:***

- ▶ *If the temperature reading is below ranges, the **LL.L** will be displayed. If the temperature reading is above ranges, the **HH.H** will be displayed.*

## **Rainfall Readings**

- ▶ Press the “**RAIN/ALERT**” button to view different rain readings, users can choose to view the value of rainfall over time, by pressing the “**RAIN/ALERT**” button, you can view the rain data for “NOW” “1 HOUR” “24 HOURS” “TODAY” “7 DAYS” “MONTH” “YEAR” and “TOTAL”.
- ▶ **NOW:** Rain from the start of a rain event, until no rain has accumulated for 30 minutes , Resets to zero after 30 minutes of no additional rainfall.
- ▶ **1 HOUR:** Rainfall that has accumulated during the past hour (Example: current time is 7:31, 1HR rain is accumulated total between 6:32 to 7:31.)
- ▶ **24 HOURS:** Rainfall based on past 24 hours of time. At each full hour, 1 hour is recorded, which is the sum of the accumulated value of 24 hours.
- ▶ **TODAY:** The accumulated rainfall value of today's day is accumulated from 0:00 to 23:59, and is reset again after 0:00.
- ▶ **7 DAYS:** Rainfall of last 7 consecutive 24HR rain readings, updates each day at 0:00, not a subject to the calendar, be sure time is set.
- ▶ **MONTH:** Rainfall this month (Ex: January 1-31), reset data on the first day of each month.
- ▶ **YEAR:** Rainfall this year, current year starting January 1 total.
- ▶ **TOTAL:** The amount of rainfall accumulated from the power or reset of the main unit.
- ▶ Press the “**HIST/UP**” and “**RAIN/ALERT**” buttons simultaneously for 3 seconds to reset the rain reading. ( Note: This will not affect the 12 month history readings which are stored in memory. )

## **Rainfall Cylinder Graph :**

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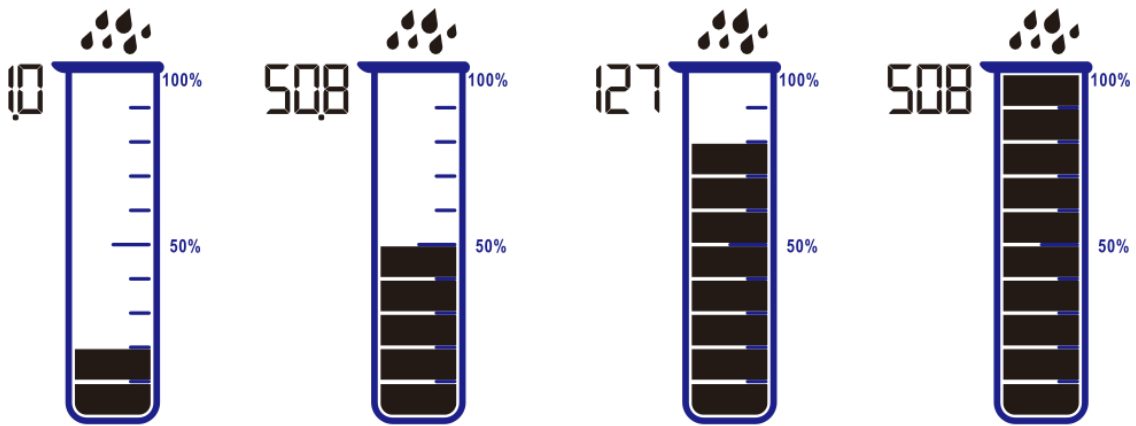
► The rain cylinder has 10 segments that change with the rainfall total. The numbers next to the cylinder graph will change with increased rainfall amounts.

► Up to 25.4 mm (1 inch) of rainfall:

- Each segment indicates 2.54 mm (0.1 inch) of rainfall.
- The graph will represent 25.4 mm (1 inch).

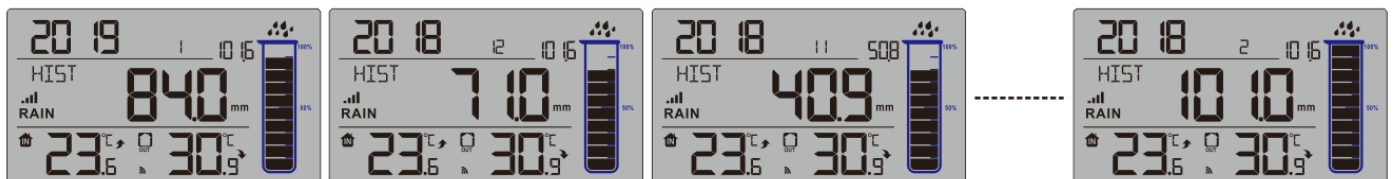
► Over 1 inch of rainfall:

- The graph will represent 50.8 mm (2 inches) of rainfall at a time.
- Each segment indicates 5.08 mm (0.2 inches) of rainfall.
- Cylinder graph will read up to 1270 mm (50 inches) of rain. Over 1270 mm (50 inches) of rain, the graph will show full.



## Rainfall History by the Month

- Rainfall History is viewable by the month for the past 12 months.
- Press the **"HIST/UP"** button to view previous month's rainfall totals.
- HIST, Month, Year and Rainfall amount will show.
- In the month history view mode, press the **"HIST/UP"** and **"RAIN/ALERT"** buttons simultaneously to reset the month's record.




### F.Y.I.:

- After 5 seconds without pressing any button the main unit switches automatically from view mode to Normal mode.
- History back 12 months, then back to current month with continued presses of **"HIST/UP"** button

## 24 Hour Rainfall Alert

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Press and hold down the “” button for 2 seconds until the icon for the Temperature Alert” starts to flash

- ▶ Press and hold down the “**RAIN/ALERT**” button for 3 seconds to enter the alert settings mode, the "OFF" flashing display of the alert, use the “**HIST/UP**” and “**DOWN**” buttons to select the open (ON) or disable (OFF) the alert function
- ▶ Press “**RAIN/ALERT**” to confirm your setting, the value of the rain alert flashes, use the “**HIST/UP**” and “**DOWN**” buttons to set the value of the 24-hour rain alert to be set.
- ▶ Press “**RAIN/ALERT**” button to confirm your setting and to end the setting procedure.

### **F.Y.I.:**

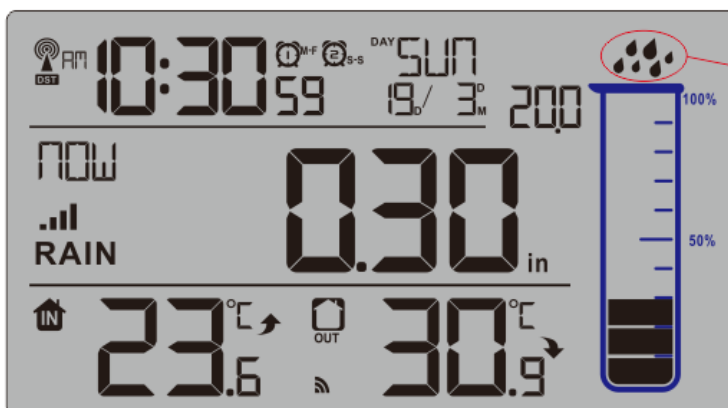
- ▶ After 20 seconds without pressing any button, the clock switches automatically from Set Mode to Normal Mode.

### **Alert Sounds | Disarm Alert**

- ▶ When armed alert value is reached, the main unit will beep 5 times each minute, until out of alert range.
- ▶ The flashing alert icon() will indicate alert.
- ▶ Press any button to stop the rain alert sound





### **NOW Rainfall Alert (silent)**

- ▶ At the beginning of a rain event (NOW), the rain drop icons will flash indicating current rainfall.
- ▶ The drops will continue to flash until the NOW reading reaches zero.
- ▶ This is a silent alert. Your station will not beep, just the raindrops will flash.
- ▶ This silent alert can not be deactivated.
- ▶ The 24 hour rainfall alert is a separate alert that is programmable.



Rain drops  
flash silently

## Low battery:

- ▶ If the “” column is display the battery icon “”, you need to replace the Main Unit battery as soon as possible.
- ▶ If the “” column is to display the battery icon “”, you need to replace the wireless sensor battery as soon as possible.

## Background lighting

- ▶ Press the “**SNOOZE/LIGHT**” button. Backlight lit 15 seconds.

## FCC WARNING

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.

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital 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.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm distance between the radiator and your body: Use only the supplied antenna.