OPERATING INSTRUCTIONS

Wireless Weather Station E9311

Please read these operating instructions carefully before using the product, and keep the instructions in a safe place for reference. If you allow third parties to use this product, make sure you pass on the operating instructions.

The sensors referred to in this manual may not be included with this weather station. For the installation, addressing and commissioning of these sensors, please refer to the operating instructions supplied with the sensor(s).

Table of Contents:

1. Introduction

Dear Customer,

Thank you for purchasing this product.

The product has been EMC-tested and meets the current national requirements. See also FCC-Information.

Please observe these operating instructions in order to maintain this condition and ensure safe operations.
Prior to using the product for the first time, please read the entire operating manual and observe all operating and safety instructions.

Please note the correct order for commissioning the product. Please also observe the mounting instructions and the information on radio interference between the sensors and base station.

1.1. Intended use

The temperature station E9311 is a high-quality temperature measuring system which processes a large quantity of temperature and air humidity data. All external sensors use wireless transmission technologies to transmit their data to the base station (433 MHz, range up to 300 ft. in open space, see chapter 14 on page 27).

You can use the following wireless sensors:
- Wireless Pool Thermometer E9310 (water temperature)
- This sensor is included with the E9250 Weather Station.
- Combination sensor E9301 (temperature and air humidity)
- This sensor is included with the E9300 Weather Station.
- Temperature and humidity sensor E9305 (temperature and air humidity)

You can use the base station with up to 9 sensors (e.g. 1 x E9251 + 8 other sensors).
Additionally, a temperature and air humidity sensor for measuring the indoor

temperature and air humidity is integrated in the base station.
Manufacturer assumes no responsibility for incorrectly displayed or measured values, and/or any consequences ensuing from them.
The product is intended for private use only. It is not designed for medical, commercial or public safety purposes.
The components of this product are not toys. Do not allow children to operate them.

The product is battery-operated.

Any other use than that described above may lead to damage to the product or to other danger.
Please read these operating instructions carefully for important information on deploying, using, and operating the product.

2. Scope of delivery

- Temperature station E9311
- Plastic base for temperature station
- Operating instructions

3. Terminology

An exclamation mark in a triangle indicates important instructions in the operating manual which must be observed under all circumstances.

The “hand” icon points to special tips and instructions on using the product.

4. Features and functions

4.1. Display of indoor temperature and air humidity

- Temperature display in °F, °C
- Can be switched to display internal dew point
- Storage of minimum/maximum temperature since last reset
- Storage of minimum/maximum air humidity since last reset
- Comfort zone indicator
- Temperature trend display

4.2. Display of one of a maximum of 9 outdoor sensors (temperature and air humidity)

- Displays data from the combination sensor E9251, or 8 outdoor sensors for temperature/air humidity (E9310, E9305)
- Optionally displays temperature or dewpoint
- Storage of minimum/maximum temperature since last reset (except E9310 which additionally stores the min./max. values for last day, last week and last month)
- Storage of minimum/maximum air humidity since last reset
- Comfort zone indicator, individual adjustable temperature comfort- range for the E9310

4.3. Frost warning

- Audible and visual alarm at temperatures below 39.2˚F/+4˚C at one of the currently displayed temperature sensors

4.4. Temperature alarm

- Audible and visual alarm at temperatures beyond a user defined temperature range. This range can be defined separately for every sensor.

5. Safety instructions

We shall not assume any liability for damage to items or persons caused by improper handling or non-observance of the safety instructions!
In such cases, any guarantee claims shall become null and void.

- Do not use this product in hospitals or medical institutions. Although the outdoor sensors only emit relatively weak radio signals, these may cause interference to life-support systems. The same can also apply in other areas.
- Do not use the unit, if there is damage to the housing.
- Do not subject the device to temperatures below 32°F (0°C) or above 158°F (70°C).
- For safety and licensing reasons (FCC), it is not permitted to convert or modify the product.
- Do not leave the packaging material laying around. Plastic foil and bags, polystyrene parts etc. are dangerous in the hands of children.
- This product is not a toy. It contains glass and small parts. Children can be injured by swallowing them. Use the unit out of the reach of children.
- This product is not a toy for pets. It contains glass and small parts. Pets can be harmed if they play with the unit.

6. Battery and enviroment insructions

- Batteries do not belong in the hands of children.
- Observe the correct polarity when inserting the batteries/rechargeable batteries.
- Do not leave batteries lying around, as pets or small children might swallow them. If your child or pet swallows a battery, consult your doctor or vet immediately.
- Leaking or damaged batteries/rechargeable batteries may lead to injury to the skin. For this reason, use suitable protective gloves when changing them.
- Make sure that batteries or rechargeable batteries are not thrown into the fire or short-circuited. Risk of explosion!
- Never dismantle batteries/rechargeable batteries!
- Do not recharge normal batteries. Risk of explosion!
- If you will not be using the product for an extendend period of time (e.g. for storage), please remove the inserted batteries/rechargeable batteries in order to prevent damage caused by leaking batteries/rechargeable batteries.

7. Preparation for operation, commissioning

Please observe the following:
Commission your outdoor sensors first (insert batteries); then commission the base station.
If you do not follow this order, the base station may not detect all your outdoor sensors.

We always recommend trying out the base station with all outdoor sensors first, before installing the outdoor sensors outside. However, the distance between the base station and the outdoor sensors should be at least 6 ft. in order to avoid interference.

If you notice that one outdoor sensor is out of range after installation, you can assume that radio reception is not sufficient (rather than the sensor being defective).
This initial function test will save extensive and time-consuming error troubleshooting later.

7.1. Commissioning the base station

- Open the battery compartment at the back of the base station.
- Insert three batteries (AA cells) into the battery compartment observing correct polarity. Use alkaline batteries if possible.

Althrough you can use rechargeable batteries, this will reduce the operational life due to their lower voltage / capacity.

- Close battery compartment.
- After you have inserted the batteries, all LC-display segments are actuated briefly, after which the version number is displayed.
- The base station then enables synchronization mode for 10 minutes. During synchronization the display shows ”SY”, with a counter underneath that counts down the 10 minutes.
- After synchronization, the following data appear on the display:

Top row (“Display panel A”, see next page):

- If no sensor is received: Temperature of the integrated sensor (indoor temperature)
- If one sensor is received: Temperature reading for this sensor
- If more than one sensor is received: Temperature reading for the sensor with address 8 (this is the pool sensor E9310 in default setting), or for the sensor with the lowest sensor address.

If you have changed the address of the pool sensor E9310, you will need to change display panel A to this address (1...8, see chapter 9.2.1.).

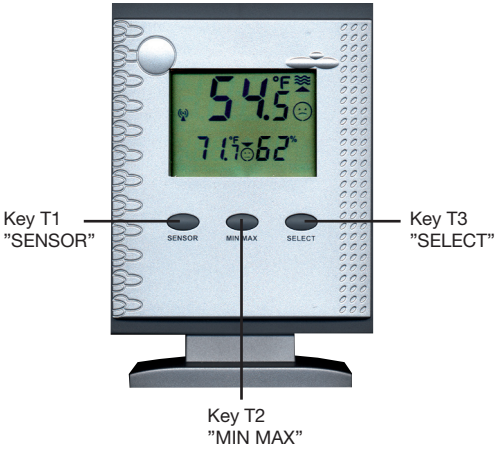
Bottom row (”Display panel B”, see next page):

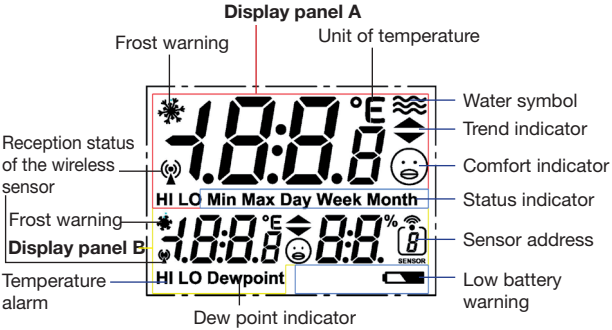
- Temperature and air humidity of the integrated sensor

Additional you can see the associated comfort indicator and trend indicator.

- You can either wall-mount the base station (there is a cut-out at the rear for this purpose) or use the plastic base, placing the base station on a level surface.
- If you wish to use the plastic base, first slot the lower spikes into the slots at the rear of the base station (below the battery compartment). Then, swivel the plinth slightly towards the front until the two other spikes lock into slots at the bottom of the base station.

8. Controls and indicators





Legend for symbols

Frost warning	The temperature at the location of the displayed sensor is below 39.2°F / +4°C
Unit of temperature	Alternatively display in °F or °C
Water symbol	Only shown when input from outdoor sensors with the addresses 1...8, not shown when displaying the indoor temperature or the combined sensor (address 9)
Trend indicator	Temperature trend: rising or falling
Comfort indicator	In display panel A: Comfort range, only depends on temperature (see chapter 10) In display panel B: Comfort range, depends on temperature and air humidity (see chapter 17)
Status indicator	Label for current display functions
Sensor address	Shows number (address) of the displayed outdoor sensor
Battery warning	Low battery warning for the base station
Dew point indicator	Indicate the dew point (as an alternative to the temperature, for display panel B only)
Temperature alarm	Indicator for upper (HI), or lower (LO) temperature threshold
Reception status	Reception status for external sensors

9. Operations

After commissioning the product as described in Chapter 7, the base station is now ready for basic operations. Please keep to the following instructions for use. If you wish to use advanced functions, please configure the product as described in chapter 10.

9.1. Key functions

Main functions

Key	Description	Main function
T1	SENSOR	Choice of sensors
T2	MIN MAX	Display the min./max. values
T3	SELECT	Toggle temperature/dewpoint; °F/°C

Basic operation

You can operate the unit with the three keys using short or long key-presses:

- Short keypress: Press for less than 1 second (ff.: ”short”)
- Long keypress: Press for more than 3 seconds (ff.: ”long”)

If you don´t press any key for 10 seconds during configuration (see chapter 10), the unit will revert to normal mode, but continue to display the last settings.

9.2. Selecting the sensors to display

- For sensor address assignments and configuration, please read the manual for the sensor.
- The E9301 and E9251 combination sensors have fixed addresses, and are always displayed as address “9”.
- When displaying the integrated sensor, no sensor address is indicated.

9.2.1. Display panel A - Pool sensor

The display panel A is usually intended for displaying the values of the pool sensor E9310.
If required, or, if you are not using an E9310 pool sensor, you can allocate any sensor to this panel.

- To choose another sensor, press the "SENSOR" key for more than three seconds until the number in display panel B disappears and the sensor address icon on the right flashes.
- Now repeatedly press the "SENSOR" key (short presses), until the required sensor address and the data for this sensor are displayed in display panel A.
- If you do not press a key for 10 seconds, or press the "MIN/MAX" or "SELECT" key (short press), the device reverts to normal mode. The indoor sensor (or selected outdoor sensor) reading is now displayed in panel B.

- You can only choose sensors from which the base station has received data input. The unit will skip unmapped sensor addresses.
- By choosing sensors 1...8 the water symbol appears.
- By choosing the combination sensor the sensor address "9" appears.
- By choosing the indoor sensor no sensor address appears.

9.2.2. Display panel B - Indoor or outdoor sensor

By default, panel B shows the indoor temperature and the indoor air humidity.
If required, you can allocate any sensor to this panel.

- To select a sensor, repeatedly press the "SENSOR" key (short presses), until the required sensor address and the data for this sensor appear in display panel B.

- You can only choose sensors from which the base station has received data input. The unit will skip unmapped sensor addresses.
- By choosing the combination sensor the sensor address "9" appears.
- By choosing the indoor sensor no sensor address appears.
- If the device is still in the selection mode for display panel A, please wait until either panel B is displayed again, or press the key "SENSOR" for more than 3 seconds, until display panel B appears again. This enables sensor selection for display panel B.

9.3. Displaying MIN/MAX values

The minimum and maximum indoor/outdoor temperature and indoor/outdoor humidity figures recorded since the last reset are stored.
Additionally, you can recall the MIN/MAX values for the last day (24 hours), the last week (7 days), and the last month (30 days) for the sensor assigned to display panel A.

If you assign another sensor to display panel A, the MIN/MAX values stored for the sensor assigned previously are deleted! Data storage is reinitialized when you assign a new sensor!

If you have selected ”Dewpoint” for display panel B, MIN/MAX dewpoint values are displayed.

- Repeatedly press the key ”MIN/MAX (Short press) until the required display value appears.
  Display sequence for display panels A and B:

	Sequence for display panel A (Pool sensor)	**Sequence for display panel B**
1	MIN value since reset	MIN value since reset
2	MAX value since reset	MAX value since reset
3	MIN value last day (Day)	MIN value since reset
4	MAX value last day (Day)	MAX value since reset
5	MIN value last week (Week)	MIN value since reset
6	MAX value last week (Week)	MAX value since reset
7	MIN value last month (Month)	MIN value since reset
8	MAX value last month (Month)	MAX value since reset
9	Current value	Current value

- When you toggle the min./max. display for panel A, panel B also toggles between the min. and max. values. However, for display panel B this only displays the min. and max. values since the last reset!
- After choosing a storage (min./max. value) display, you can successively display the individual threshold values for all sensors on panel B by repeatedly pressing the “SENSOR” key (short press).
- After displaying Max. Month, the device reverts to displaying the current value on panel A, as per “Sequence for display panel A”.

Deleting MIN-/MAX values

All stored MIN-/MAX values for all sensors are deleted together!

- Hold down the ”MIN MAX” key for more than 3 seconds.
- The display is cleared, following which ”rEs” is displayed for approx. 2 seconds.
- After this, the display reverts to the mode shown before resetting. The current values are immediately applied as the new MIN-/MAX values.

9.4. Selecting temperature metered value (Temp./Dewpoint)

You can toggle display panel B between displaying the temperature and the associated dewpoint.

Temperature / dewpoint display

- Press the key ”SELECT” (short press). Display panel B toggles between temperature and dewpoint. For the dewpoint display you additionally see a „Dewpoint” message.

9.5. Frost warning

The frost warning is always active. This function warns you, if the temperature for the sensor displayed in the current display panel drops below 39.2°F.

When the temperature first drops below 39.2°F, the frost warning icon in the panel flashes for 30 seconds; after this the frost warning icon stays on permanently.

The frost warning is not deactivated until temperature rises above 41°F.
If required, you can enable an audible warning along with the frost warning (see chapter 10.3).

- The alarm value of 39.2°F is fixed and not adjustable.
- The frost warning is only enabled for the sensors displayed in display panel A and B; in other words, if the temperature of sensors not currently displayed falls below 39.2°F, no alarm occurs.

9.6. Activating the temperature alarm

You can set up high and/or low temperature thresholds.
If the temperature exceeds a threshold, a temperature alarm occurs.
• Status indicator "**HI"**: upper temperature threshold is exceeded
• Status indicator "**LO"**: temperature below lower temperature threshold
If you assign temperature threshold values, as described in chapter 10.2, a temperature alarm automatically occurs.
To disable the temperature alarm, set the threshold to "--.-" (see Chapter 10.2).
If required, you can enable an audible warning with the temperature alarm (see Chapter 10.3).

- The temperature alarm is only enabled for the sensors displayed in display panel A and B; in other words, if the temperature of sensors not currently displayed exceeds one of these thresholds, no alarm occurs.

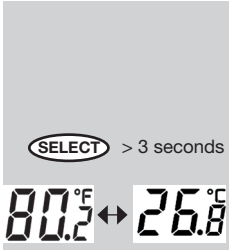
9.7. Switching off audible alarm signal

- Press any key, to switch the audible warning off immediately.

The signal generator function remains enabled after switching off the audible warning. However, audible warnings are blocked, for as long as the temperature measurement causing the alarm is outside of the normal range. For example, if a permanent frost warning exists, there will be no audible alarm for the next temperature measurement from the sensor in question. The audible alarm is not reenabled until the measurement (frost warning or min./max. temperature) causing the alarm returns to normal for a minimum of one measurement.

10. Configuration

10.1. Selecting temperature unit



You can toggle the temperature unit between ˚F or ˚C.

Toggling ˚F/˚C

- Press the key "SELECT" for approx. 3 seconds. The unit changes from ˚F to ˚C, and vice versa, in both display panels.

10.2. Setting the temperature alarm thresholds

You can set-up a high and/or low temperature threshold for any sensor. A temperature alarm occurs for temperatures outside the threshold values.

- The temperature alarm is disabled as a factory default (no thresholds are set).
- The configurable range is between -21.8˚F and +175.8˚F independently of the sensor type. Take the sensor's range into consideration when setting the alarm limits.
- To set only a high or low threshold, set the other threshold to "– – .– " (disabled).
  This is the setting that follows the value of "+175.8˚F".
- The temperature alarm only applies to the active sensors, that is, the sensors displayed on panels A and B. If the temperature of a sensor that is not displayed is above/below the threshold, no alarm occurs.

SENSOR + MIN MAX

> 3 seconds

resp.

SELECT

Set value

Setting low temperature alarm threshold

- Press the keys ”SENSOR” and ”MIN MAX” together for approx. 3 seconds.
- The lower temperature threshold for the sensor assigned to display panel. A now appears, with the “LO” symbol underneath it.
- If you wish to adjust the threshold for one of the other sensors, repeatedly press the ”SENSOR” key (short press) until the required sensor address appears in display panel B

No temperature threshold is set as a factory default, the display reads ”– – .–”.

- Set the required value for the lower threshold by repeatedly pressing the ”SELECT” key (short press) or by pressing the “SELECT” key for more than 3 seconds.
- You can now proceed to configure the high temperature threshold.

SENSOR + MIN MAX

> 3 seconds

resp.

MIN MAX

Setting high temperature alarm threshold

- Press the keys ”SENSOR” and ”MIN MAX” together for approx. 3 seconds.
- The lower temperature threshold for the sensor assigned to display panel A and the ”LO” symbol appears.
- If you wish adjust the threshold for one of the other sensors, repeatedly press the ”SENSOR” key (short press) until the required sensor address appears in display panel B.
- Now press the key ”MIN MAX” (short press). The status indicator below the sensor reading changes to ”HI”.

No temperature threshold is set as a factory default, the display reads ”– – .–”.

SELECT — Set value

SENSOR — Back to normal mode

- Set the required value for the high temperarture alarm threshold by repeatedly pressing the ”SELECT” key (short press) or by pressing the “SELECT” key for more than 3 seconds.
- To return to normal mode press the ”SENSOR” key (short press);
  alternatively,
  do not press any keys for approx. 10 seconds – the device will automatically return to normal mode.

Disabling temperature alarm
To disable an alarm threshold for a sensor, set the threshold value for the sensor to “– –.–” (this value follows “+175.8°F”).

10.3. Enabling/Disabling the audible warning

The integrated buzzer generates an audio warning, if the audio warning option is enabled and a frost warning or a temperature alarm is triggered. When the alarm is first triggered, the audible warning occurs for 30 seconds, and then for approx. 3 seconds every 30 seconds. The audible warning is enabled/disabled for all sensors together.

Enabling audible warning

SELECT + MIN MAX

> 3 seconds

- Press the keys ”SELECT” and ”MIN MAX” together for approx. 3 seconds.
- The display is cleared, and an “ON” message appears in both display panels next to the frost warning icons, and the HI/LO status message.
  The device returns to normal mode after this.

Disabling audible warning

SELECT + MIN MAX

> 3 seconds

- Press the keys ”SELECT” and ”MIN MAX” together again for approx. 3 seconds.
- The display is cleared, and an “OFF” message appears in both display panels.
  The device returns to normal mode after this.

10.4. Setting the comfort temperature range of display panel A

The display panel A is usually intended for displaying the values of the pool sensor E9310. You can set an individual temperature range, to reflect your choice of comfortable temperatures.

The comfort symbol in display panel A shows you whether the temperature is within the required range. The comfort range is defined by the adjustable high and low temperature threshold values.

The comfort indicator can be interpreted as follows:

- ☺ Temperature is within the comfort range
- 😐 Temperature is less than 3.6°F outside the comfort range.
- ☹ Temperature is more than 3.6°F outside the comfort range.

- The factory default for the comfort range is 77°F to 82.4°F.
- The adjustable range is from 41°F to 158°F (independently of the sensor). Take the sensor's measuring range into consideration when defining the comfort range.

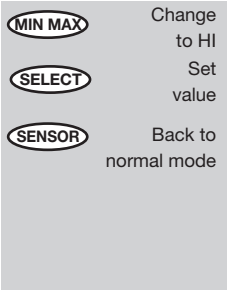
- Press the keys "SENSOR" and "SELECT" together for approx. 3 seconds.
- The display shows the current low temperature threshold for the comfort range, the comfort symbol ☺ and "LO" message in display panel A.
- Set the required value for the low temperature threshold by repeatedly pressing the "SELECT" key (short press) or by pressing the "SELECT" key for more than 3 seconds.

SENSOR + SELECT

> 3 seconds

SELECT

Set value



- Then press the “MIN MAX” key (short press). The status indicator changes to ”HI”.
- Set the required value for the high temperature threshold by repeatedly pressing the ”SELECT” key (short press or for more than 3 seconds).
- Return to normal mode by repeatedly pressing the ”SENSOR” key (short press);
  alternatively,
  do not press any keys for approx. 10 seconds – the device will automatically return to normal mode.

11. Miscellaneous functions and settings

11.1. Adding new sensors

You can add new sensors into the system at any time.
Note that the maximum number of radio sensors (incl. combined sensor) is 9 and avoid duplicate addresses.

- New sensors are automatically logged on twice daily (at intervals of 12 hours) during the regular sensor search.
- You can also add new sensors by reinitializing the base station. **Note that the device is reset to the factory settings, any stored data will be deleted!**

11.2. Resetting to factory defaults

The factory defaults are as follows:

- Display panel A: Pool sensor or other sensor with address 8
- Display panel B: Indoor sensor
- No alarm thresholds set
- Comfort range on display panel A: 77°F to 82.4°F.
- Audible warning disabled

- Open the battery compartment, remove the batteries and reinsert the batteries with the correct polarity.
- This sets all user settings to the factory default.
- All stored MIN-/MAX data is deleted.
- The device boots as described in chapter 7.

11.3. Reception status indicator

- The antenna icon (see above) is displayed while reception of the selected sensor is good.
- If the signal is interrupted for more than 40 minutes, the antenna icon starts to flash. The last values to have been received are displayed.
- If reception is interrupted for more than 12 hours, the antenna icon disappears and the associated value is displayed as ”- - .-”.

11.4. Frost warning

This function warns you, if the temperature for the sensor displayed in the current display panel drops below 39.2°F/+4°C (see more in chapter 9.5). In the current display panel the frost warning symbol (see above) appears.

12. Changing batteries

Depending on what type of batteries or rechargeable batteries you use, the replacement interval can be very different. High-quality alkaline batteries provide longest service, rechargeable batteries or cheap zinc-carbon batteries require more frequent changing.

12.1. Base station

If the battery flat symbol appears in the display ( ), your batteries need replacing.

- Always replace the whole set of batteries.
- Never mix new batteries with “used” batteries.
- Always use three batteries of the same type by the same manufacturer.
- Do not mix batteries with rechargeable batteries.
- As already mentioned, you can use rechargeable batteries, however, durability is appreciably lower than with batteries.
- Follow the instructions in chapter 7.1 to change the batteries.

Please observe the following:
After replacing the batteries, all data, values stored in the base station (e.g. settings, min.-/max. data etc.) are deleted and must be entered again.

12.2. Combination sensor, outdoor sensors, pool sensor

If you do not receive input from a sensor for more than 24 hours, replace the batteries with new ones as described in the operating manual for the sensor.

Before changing the batteries, check whether radio interference is causing the data transmission failure. There will be no readings from the sensor at the base station in this case. This could be caused by a metal object in the transmission path (e.g., a parked vehicle).

13. Troubleshooting

Observe the safety instructions contained in these operating instructions!

Problem	Remedy
No reception	• The distance between the base station and outdoor sensors is too great. Relocate the outdoor sensors. • Objects or shielding materials are interfering with the radio reception. Relocate the outdoor sensors and the base station. • The batteries of the outdoor sensors are too weak or flat. Try replacing batteries in the sensors. • Another transmitter on the same or a neighboring frequency is interfering with the radio signal from the outdoor sensors. This could be radio headphones, radio loudspeakers, or other similar devices. Products of this kind are not typically operated 24x7; radio reception might be perfect the next day, and this makes troubleshooting more difficult. If possible, set other devices to a different frequency to eliminate weather station reception problems.
Outdoor sensors interfering with other devices	• The outdoor sensors transmit their data to the base station approx. every 3 minutes for a period of 0.1 (100 ms) seconds. In this short period, interference with other devices is possible. For example, a very short disturbance signal can be audible from a radio headphone every 3 minutes.

(continued next page)

Problem	Remedy
Problems with the Synchronization	• When you insert batteries into the outdoor sensors and the base station (make sure you follow this order), the devices enter synchronization mode. In sync mode, a datagram is transmitted every 4 seconds to speed up detection and registration of the outdoor sensors by the base station. To trigger a resync, remove the batteries from the base station and outdoor sensors. Then wait for at least 60 seconds before reinserting the batteries into the outdoor sensors, and finally the base station (make sure you follow this order – insert batteries into all outdoor sensors first, then into the base station. Note that this deletes all values/data stored on the base station (e.g. min./max. values, settings etc.). • Before you set up the outdoor sensors, for example in your garden, carry out a function test as described in chapter 7.

14. Range

The transmission range of the radio signals to the base station is 300 ft. under optimum conditions. This is often described as the “free field range”.

This ideal arrangement (e.g. base station and outdoor sensor on a smooth, level field without trees, houses etc.) is, however, never found in practical conditions.

You will normally wish to set up the base station in your home, with the combination sensor in your garden and additional outdoor sensors, for example in outbuildings or your garage.

The following can considerably reduce the reception range:

- walls, reinforced steel ceilings
- coated/layered insulation glass panes
- vehicles
- trees, bushes, earth, rocks
- proximity to metal & conductive objects (e.g. radiators)
- proximity to the human body
- broadband disturbances, e.g. in residential area (Cordless telephones, mobile phones, radio headphones, radio loudspeakers, other radio weather stations, baby monitors etc.)
- proximity to electric motors, transformers, switching power supplies or computers
- proximity to poorly shielded computers with open panels or other electrical devices

As the local circumstances are different at every location, we cannot guarantee a specific reception range.
If your base station is not receiving data from the pool sensor, combination sensor or any other outdoor sensors (despite fitting new batteries), reduce the distance between the outdoor sensors and the base station, and relocate the devices.

Refer to chapter 7 and 13 in these operating instructions.

15. Maintenance and cleaning

15.1. General
Check the technical safety of the product regularly, e.g. damage to the housing.

If it can be assumed that the device is not safe for operations, switch the device off, and secure against inadvertent switching on. Remove the batteries.
You can assume that the device is not fit for use if

- the device shows visible damage
- the device is no longer functional
- after extended periods of storage in unfavorable conditions
- after transportation in unfavorable conditions

Observe the following safety instructions before cleaning or servicing the device:

Remove the batteries before cleaning, servicing or repair work.
There are no user-serviceable parts on the inside; do not open the device.
Repairs may only be carried out by a specialist who is familiar with the associated hazards and relevant regulations applying to the device.

15.2. Cleaning base station
Dust can be removed very easily with a vacuum cleaner and a soft, clean brush. Hold the vacuum cleaner nozzle close to the base station (avoid touching the base station as this may cause scratching!) and remove the dust with the brush. The dispersed dust will be sucked in by the vacuum cleaner. Use a soft, dry, lint-free cloth to clean the exterior of the product.
In case of heavy soiling, you can use a cloth slightly moistened with warm water.
Never use aggressive cleaners or chemical solutions as this could damage the surface of the device or impair its functionality.

16. Handling

Observe all the safety precautions in these operating instructions!

16.1. General

Never open or dismantle the product (except for the tasks described in these operating instructions, e.g. changing the batteries). There are no user-serviceable parts inside the product.
Dropping the product will cause damage, even from a low height.

16.2. Base station

Avoid the following adverse ambient conditions during operation or transport:

- moisture or excessive humidity
- extreme cold or heat
- direct sunlight
- dust or flammable gases, vapors or solvents
- heavy vibration
- strong magnetic fields, such as, for example, in the vicinity of machines or speakers

Never use the product immediately if it has been taken from a cold area to a warm area. This causes condensation which could destroy the device under certain circumstances.

Wait until the base station has reached room temperature. This can take several hours!

Choose a safe and stable location for the base station, and ensure that the base station cannot fall down – danger of injury.

Valuable or easily scratched furniture surfaces should be protected from damage by suitable mats before setting up the base station.

17. Terminology

17.1. Comfort indicator (only display panel B)

The symbol of the comfort indicator (the three different "smileys" ☺ 😐 ☹) reflect the room climate; refer to the following table when interpreting the weather station readings:

Temperature	air humidity (%)									
	20	30	35	40	45	50	55	60	65	70
< 64,4°F	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹
64.4-67.9°F	☹	☹	☹	😐	😐	😐	😐	😐	😐	☹
68.0-71.5°F	☹	☹	☹	😐	☺	☺	☺	☺	😐	☹
71.6-75.1°F	☹	☹	😐	☺	☺	☺	☺	😐	☹	☹
75.2-78.7°F	☹	😐	☺	☺	☺	☺	😐	☹	☹	☹
78.8-82.3°F	☹	😐	😐	😐	😐	😐	😐	☹	☹	☹
over 82.4°F	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹

Depending the temperature to humidity ratio, there are clearly delimited areas which are defined as comfortable or uncomfortable climates.
For example, you might consider humidity of under 30% to be too dry at a temperature of 77° F (e. g. dry air due to central heating) and humidity of over approx. 60% to be to sticky.

- The comfort indicator on display panel A is driven by the defined comfort temperature range (see chapter 10.4.)
- For sensors which do not transmit air humidity values, the comfort indicator does not appear on the display.

17.2. Dewpoint

The dewpoint is a temperature that depends on the coincidence of a certain temperature and a certain humidity. At this point, humidity starts to condense, and precipitates (mist, vapor). If the dewpoint for water vapor is below 32° F, precipitation will take the form of snow or frost.

18. Disposal

18.1. General
Dispose of the unusable product according to valid legal regulations.

18.2. Disposing of batteries/rechargeable batteries
Dispose of exhausted batteries properly.

19. Technical Specifications

Temperature range indoors: ..... 32°F to 140°F (0°C to +59.9°C)
Resolution: ..... 0.1 °F
Accuracy: .....±1.4 °F
Measurement range rel. humidity indoors:.....0 % - 99 %
Resolution: .....1 %
Accuracy: .....±5 % (30 % to 70 %)
Measuring interval of the indoor sensor: .....10 minutes
Number of external sensors: .....max. 9
Transmission interval of the outdoor sensors:.....approx. 3 minutes
Transmission frequency:..... 433.92 MHz
Free field range:..... up to 300 ft (see chapter 14)
Dewpoint display:.....for sensors with temperature and air humidity
Frost warning:.....automatic at temperatures ≤39.2°F/+4°C
Temperature alarm: ..... freely configurable for every sensor
Comfort indicator ..... separately for both display panels
.....freely configurable for pool sensor
.....(or other with address 8)
Voltage supply: .....3 x 1.5 V AA/LR6/Mignon cells
Environment temperature range: .....32 °F to 122 °C
Display viewing area (w x l): .....2.2 x 1.6 inch
Case dimension (w x l x d): .....4.1 x 5.7 x 2.2 inch (with base)
..... 4.1 x 5 x 1.3 inch (without base)

20. FCC information

FCC ID: RNT-PTD300US

Changes or modifications not expressly approved in writing by P3 International may 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.

The internal antenna used for this mobile transmitter must provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

21. Service and Warranty information

P3 INTERNATIONAL CORPORATION LIMITED WARRANTY

P3 INTERNATIONAL CORPORATION ("P3") warrants to the original retail purchaser only, that its product is free from defects in material or workmanship under the condition of normal use and service for a period of six (6) months from the date of purchase. In the event that a defect, malfunction or failure occurs or is discovered during the warranty period, P3 will repair or replace at its option the product or component part(s) which shall appear in the reasonable judgment of P3 to be defective or not to factory specifications. A product requiring service is to be returned to P3 along with the sales receipt or other proof of purchase acceptable to P3 and a statement describing the defect or malfunction. All transportation costs shall be borne by the owner and the risk of loss shall be upon the party initiating the transportation. All items repaired or replaced thereunder shall be subjected to the same limited warranty for a period of six (6) months from the day P3 ships the repaired or replaced product. The warranty does not apply to any product that has been subject to misuse, tampering, neglect, or accident or as a result of unauthorized alterations or repairs to the product. This warranty is void if the serial number (if any) has been removed, altered, or defaced. This warranty is in lieu of all warranties expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose which are expressly excluded or disclaimed. P3 shall not be responsible for consequential, incidental or other damages, and P3 expressly excludes and disclaims liability for any damages resulting from the use, operation, improper application, malfunction or defeat of any P3 product covered by this limited warranty. P3's obligation is strictly and exclusively limited to the replacement or repair of any defective product or component part(s). Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. P3 does not assume or authorize anyone to assume for it any other obligation whatsoever. Some states do not allow limitation on how long an implied warranty lasts, so the above limitations may not apply to you. It is the owner/user's responsibility to comply with local, state, or federal regulations, if any, that may pertain to P3 products or their use. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

If you experience difficulty in the operation of your unit, or if your unit requires repair please
contact:

P3 INTERNATIONAL CORPORATION
TECHNICAL SUPPORT
Tel: 212-741-7289
Fax: 212-741-2288

Email: techsupport@p3international.com

1st English edition 2006

Printed in Hong Kong
Modifications due to technical improvements may be made without prior notification.
00066787 Y2006 V1.0

P3 International Corporation

Wireless
Pool Thermometer

E9310

Operating Manual

Please read these instructions carefully from start to finish before initial start-up to avoid functional breakdown and faulty operation. The manual contains important information about the installation and operation. Keep the manual available for future reference. If you sell or give away this unit, please include this manual.

1st English edition March 2006

Printed in Hong Kong
Modifications due to technical improvements may be made without warning.
66255 Y2006V1.0

Content

1. General information and function

This wireless battery-operated pool thermometer is a high quality instrument which will measure the water temperature in swimming pools, garden ponds, spas, etc. It is water-proof and will float on the water‘s surface.
The thermometer includes a temperature display. Water temperature can be displayed in degrees Fahrenheit (˚F) or Centigrade (˚C).
The thermometer includes a transmitter which will broadcast the temperature data to a wireless receiver. The E9310 is compatible with the following receivers from P3 International:
E9250 Weather Station
E9300 Weather Station
E9311 Display Panel

The Weather Stations will display temperature data from the E9310 as they do with other remote temperature sensors in the series. To use the E9310 Pool Thermometer with the above products, it must be configured with an address. Please refer to this manual as well as the manual included with your weather station to complete this step.

2. Intended usage

This product is intended for household consumer use. It is not suitable for medical purposes or commercial applications.
This product is designed to display water temperature in pools, ponds, spas, etc. It is only designed for use with water, not any other liquid.
This product is battery-operated. It transmits data via radio frequency to a compatible receiver. It uses a frequency of 433 MHz and has a maximum open-field range of 300 ft.
Any use other than described in this manual may damage the product or cause other dangers.
This product has been tested for emissions and meets the requirements of national guidelines.

3. Safety Instructions

We shall not assume any liability for damage to items or persons caused by improper handling or non-observance of the safety instructions!
In such cases, any guarantee claims shall become null and void.

- Do not use this product in hospitals or medical institutions. Although the outdoor sensor only emits relatively weak radio signals, these may cause interference to life-support systems. The same can also apply in other areas.
- Do not use the unit, if there is damage to the housing.
- Do not subject the device to temperatures below 32˚F (0°C) or above 158˚F (70°C).
- Caution: Freezing can cause damage! Take the unit out of the water, if the temperature goes to 32˚F (0˚C).
- For safety and licensing reasons (FCC), it is not permitted to convert or modify the product.
- Do not leave the packaging material laying around. Plastic foil and bags, polystyrene parts etc. are dangerous in the hands of children.
- This product is not a toy. It contains glass and small parts. Children can be injured by swallowing them. Use the unit out of the reach of children.
- This product is not a toy for pets. It contains glass and small parts.. Pets can be harmed if they or play with the unit.

4. Battery and environment instructions

- Batteries do not belong in the hands of children.
- Observe the right polarity when inserting the batteries.
- Do not leave batteries laying around. Pets or small children may swallow them. If they are swallowed, contact a doctor immediately.
- Leaking or damaged batteries may lead to injury to the skin. For this reason, use suitable protective gloves when changing them.
- Make sure that batteries or rechargeable batteries are not thrown into the fire or short-circuited. There is a likelihood of explosion!
- Never dismantle batteries!
- Do not recharge normal batteries. There is a risk of explosion!
- If the product is not used for longer periods of time (e.g. in case of storage), please remove the inserted batteries in order to prevent damage caused by leaking batteries.

5. Preparing for operation

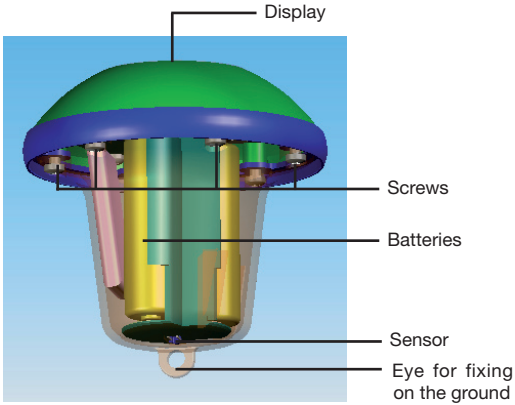
5.1. Open the housing

- Rotate the unit and unscrew the 6 screws (see below)
- Lift up the upper part carefully.

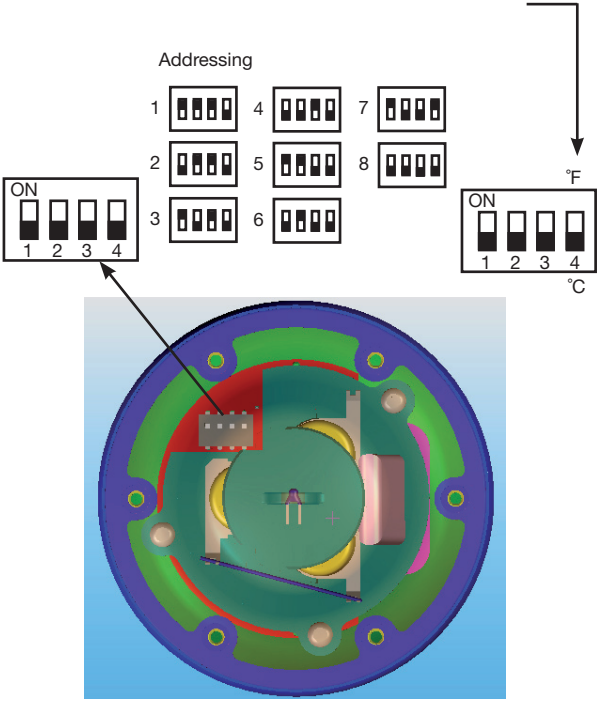
5.2. Inserting the batteries

- The unit is operated with 3 x 1,5 V AA batteries. Use alkaline batteries for longer life and better protection against leaking.
- Insert the three batteries into the battery holder with right polarity as shown in the battery holder.
- If you want to make settings (addresses or measuring unit), go to the next chapter.
- Finally, close the housing. Be sure the temperature sensor is placed in the correct position in the housing and most importantly that the neoprene seal ring is aligned properly before you close the housing and tighten the screws. Tighten the screws carefully in a diagonal sequence.

5.3. Setting address and measuring units



When you open the unit, you will see the DIP switch located on the circuit board (see diagram below).
The DIP switches numbered 1-3 are used for addressing. The DIP switch numbered 4 is used for choosing measuring units (°F or °C). The default values set at the factory are address 8 and degrees Fahrenheit (°F).
If you plan on using this unit in conjunction with a compatible receiver, choose an unused address in your set. Check the addressing diagram below.
Choose the measuring units as per the diagram below.
Close the housing carefully as described in chapter 5.2



6. Operation

Gently set the tightly closed unit on the water‘s surface.
Wait until the temperature display shows a stable value. The temperature of the inner housing will take some time to match the water temperature.

Caution!
Do not throw the unit into the water. Do not use the unit as a toy or sporting equipment.
Mind your pets. Do not allow them to use the unit as a toy.
Do not submerge the unit. It is designed to float and work on the water‘s surface.
Do not use the unit in water that is too hot (>158ºF/70º) or icy water.
Remove the unit from the water when not in use.

7. Range

The free field range, i.e. the range of the line of sight contact between the transmitter and the receiver is 300 ft. under optimum conditions. Walls and even reinforced concrete can be penetrated, which does, however, reduce the range. A reduced range can occur due to the following reasons:

- High-frequency interference of all kinds
- Built structures and vegetation of all types
- The distance of the transmitter or receiver from conductive surfaces or objects (even to the human body or the ground) has an effect on the transmission characteristics and therefore the range.
- Wide band interference in built up areas can reach levels that reduce the signal-noise ratio throughout the frequency band which results in a reduced range.
- Devices with adjacent working frequencies can also influence the receiver.
- Badly shielded PCs can irradiate the receiver and limit its range.

8. Maintenance

8.1. Changing the batteries

- If the flat battery symbol appears in the display (Lo Bat) all batteries must be changed for ones of the same type as described in Section 5.2 (p. 6).
  Always change all 3 batteries and use only high-quality alkaline cells.

Lo-Bat

8.2. Cleaning

- Clean the unit using only a soft cloth. Do not use cleaners containing solvents. Make sure that no moisture enters the interior of the unit.
- Do not exert any pressure on the display.

9. Disposal

9.1. General

- Dispose of the unusable product according to valid legal regulations

9.2. Dispose of exhausted batteries properly.

10. Technical Data

Measurement range: .....32°F to 158°F (0°C to 70°C)
Resolution: ..... 0,1°F/°C
Accuracy: .....±1,8°F/±1°C
Display updating:..... every 5 sec.
Data transmission interval: .....about 3 min.
Transmission frequency:..... 433,92 MHz
Free field range:.....max. 300 ft.
Voltage supply: ..... 3 x 1.5 V/AA battery
Battery service life: .....2-3 years
Dim. (H x ø):.....88 x 84 mm

11. FCC Information

FCC ID: RNT-PT3

Changes or modifications not expressly approved in writing by P3 International Corporation may 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.
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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
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If you experience difficulty in the operation of your unit, or if your unit requires repair please contact:

P3 INTERNATIONAL CORPORATION
TECHNICAL SUPPORT
Tel: 212-741-7289
Fax: 212-741-2288

Email: techsupport@p3international.com