Wireless Pool Thermometer
User Manual

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1.Getting Started

Note: Power up the pool sensor first and then the Display Console second, don’t press any button until all data has been received.

1.1 Parts List

1 x Display Console: Size: 4.3"x2.5"x0.65" (11x6.3x1.6cm) LCD Size: 2.1"x1.7" (5.3x4.3cm)
1 x Pool transmitter: Size:6.9"x4.2"x3.7"(17.5x10.6x9.5 cm)
2 x Wrench (for Upper lid and Lower lid) **Note:** The pool sensor is very tight for the purpose of waterproofing , please use wench to open and close it easily.

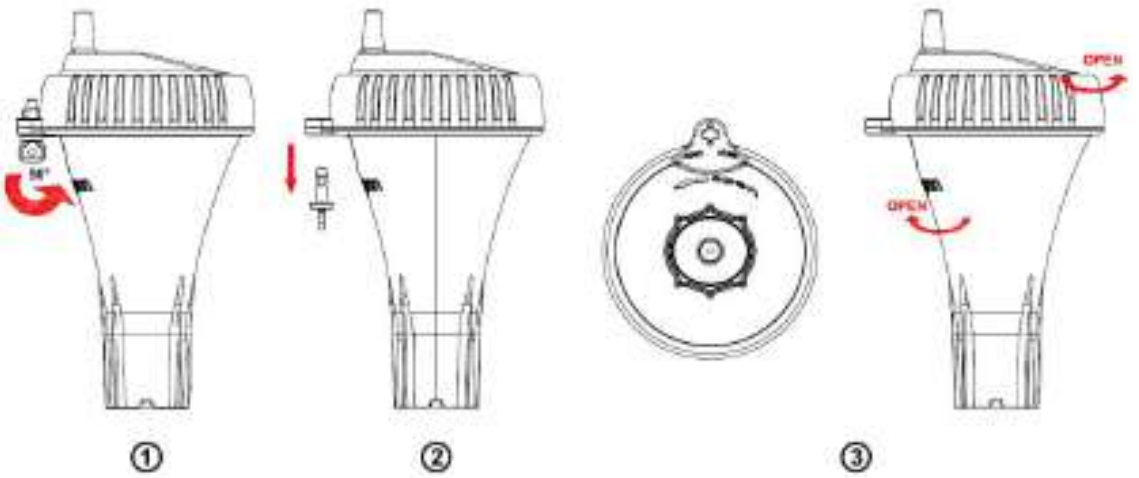
2.Battery Installation

2.1 Pool Sensor(Transmitter)

Note: To avoid permanent damage, please take note of the battery polarity before inserting the batteries.

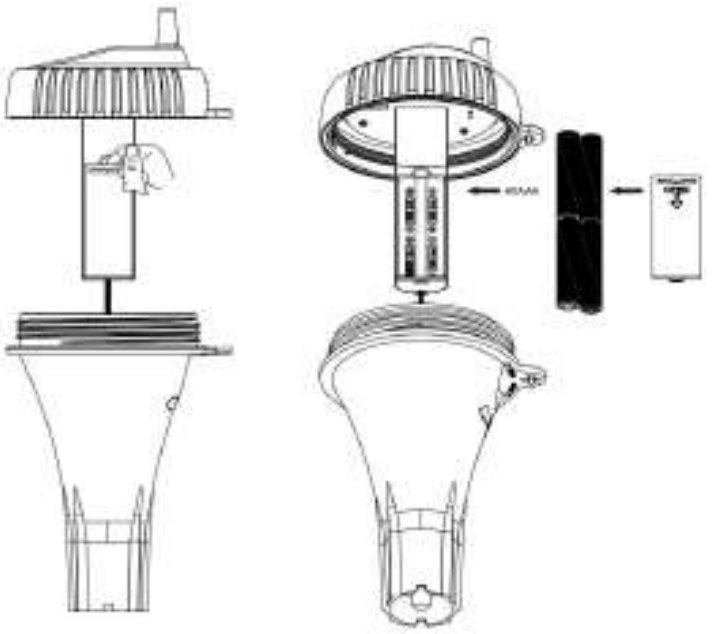
Note: We recommend fresh lithium batteries for sensor temperature below -4 °F (-20 °C) in cold weather environments.

a.To insert the batteries, ① Twist the KEY to unlock, ② remove the KEY, and ③twist the main body of the sensor by removing the upper lid and lower lid with the wrench(included), as shown in below image .



Note: Refer to Wrench Usage Instructions to open easily along the arrow direction.

b. Install 4 x AAA batteries. (Note the Battery polarity)



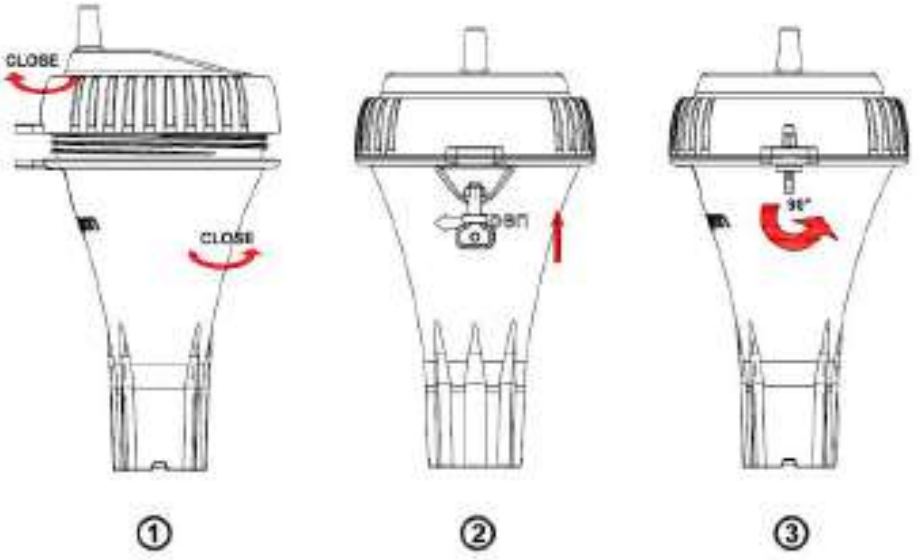
① ②

c. Take out the desiccant pack from the plastic bag and put into main body of the sensor. This helps absorb moisture and keep the main body inside dry.

d. Before closing battery door, make sure both red colored gaskets are properly seated in their tracks as shown in below image. Failure to properly seal the floating thermometer will result in water leakage and damage.



e. To close the lid, ① Twist the upper lid and lower lid with wrench until it is firmly locked and the key hole is aligned. ②Insert the key and ③ turn 90 degrees to lock the lid, as shown in below image.



f. A tether can be attached to the key hole to fix the sensor in a certain range (Tether not included).



Note: Place the sensor in the water and make sure that it is within the effective transmission range (100' (30m) under most conditions) from the display console. Don’t immerse the whole sensor into the water for a long time.

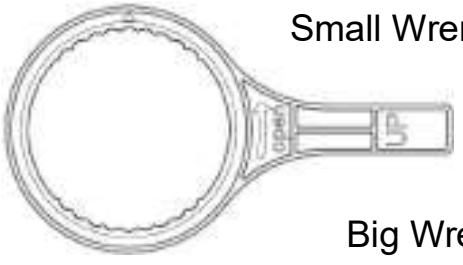
2.1.1 Wrench Usage Instructions

Please refer to the following operation.

The wrench is faced up with the word “UP” facing upwards.



Small Wrench

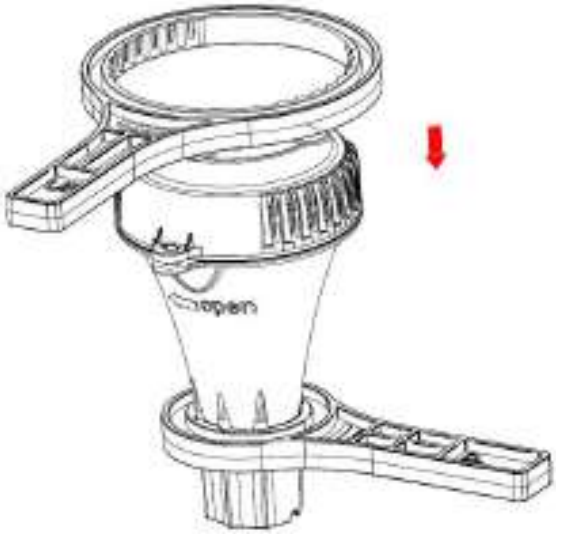


Big Wrench

a.The small wrench and the lower cover must be attached tightly.

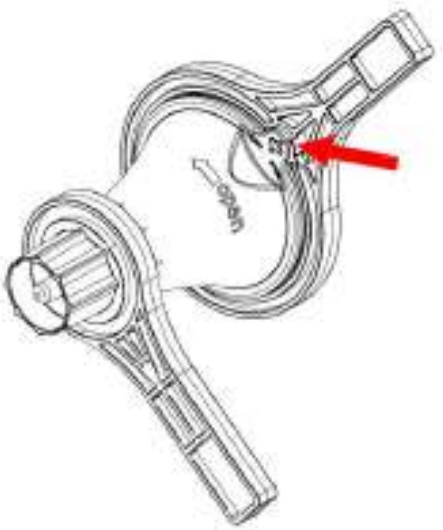


b. The big wrench and the upper cover must match tightly, especially the arrow positioning.



c. Make sure that the two wrenches are properly

matched to 90 degrees, so that the sensor can be opened easily.



d. Using your left hand, hold the big wrench and turn the lid counter-clockwise while holding the small wrench firmly with your right hand.



NOTE: You need to hold the big wrench with your right thumb, prevent the big wrench from

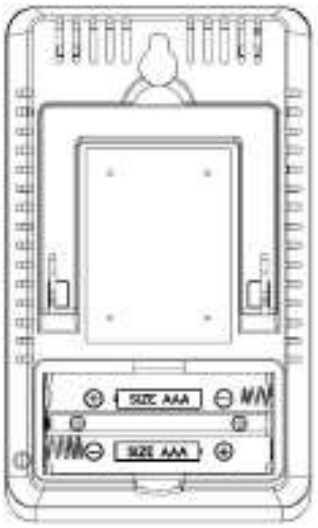
slipping.

2.2 Display Console

2.2.1. Remove the battery door on the back of the console, as shown in below image.

2.2.2. Insert 2xAAA (alkaline or lithium, avoid rechargeable) batteries, and close the battery door to put on desk or mount on the wall.

2.2.3. Don’t touch any buttons until all data has been received.

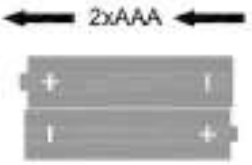






Console Display

(°F or °C shown as the picture)





Note: Move the sensor about 5' to 10' (1.5m to 3m) away from the display console (if the sensor is too close, it may not be received by the display console).

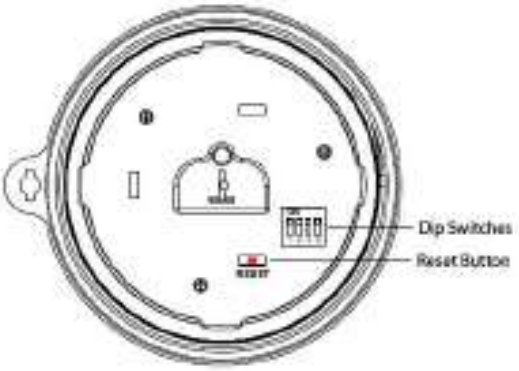
Note: If you have more than one remote sensor, make sure they are all powered up and transmitting on different channels.

3. Features

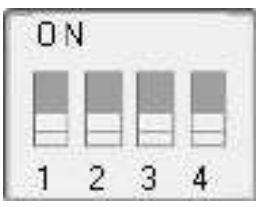
3.1 Pool Sensor Features

1). The Pool sensor includes dip switches for assigning channel numbers(1-8)

2). The pool sensor includes a reset button. If the display does not power up after inserting the batteries, press the reset button as shown in the image below.



3). All four dip switches are shown in the OFF position (default setting) in the image below.



a. Channel Number: The display console supports up to 8 transmitters. To set each channel number (the default is Channel 1), change Dip Switches 1, 2 and 3, as referenced in Table 1.

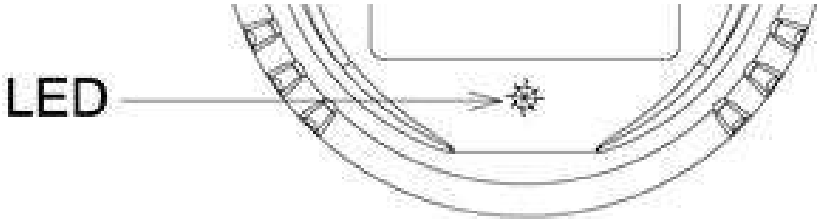
b. Temperature Units: To change the transmitter display temp units (°F vs. °C), change Dip Switch 4, as referenced in Table 1.

DIP SWITCH				Function
1	2	3	4	
DOWN	DOWN	DOWN	---	Channel 1
DOWN	DOWN	UP	---	Channel 2
DOWN	UP	DOWN	---	Channel 3
DOWN	UP	UP	---	Channel 4
UP	DOWN	DOWN	---	Channel 5
UP	DOWN	UP	---	Channel 6
UP	UP	DOWN	---	Channel 7
UP	UP	UP	---	Channel 8
---	---	---	DOWN	°F
---	---	---	UP	°C

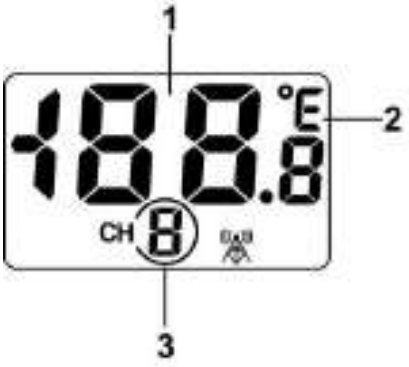
Note: Please set up dip switches before inserting batteries. Press the **Reset** button after

changing the Channel number or C/F unit.

4). After inserting the batteries, the remote sensor's LED indicator will light for 4 seconds, and then flash every 60 seconds thereafter. Each time it flashes, the sensor is transmitting data.



5). Verify the correct channel number (CH) and temperature units (°F vs. °C) are on the display, as shown in below image.



(1) Temp

(2)Temp units (°F vs. °C)

(3)channel number

3.2 Display Console Features

When batteries are installed (don’t press any buttons), the console will instantly display indoor

temperature and time. The pool temperature will update on the display within a few minutes on the appropriate channel.

Note: If the remote does not update, please refer to the troubleshooting guide in **Section 9**.

3.2.1 Console SET Mode

Note: The console has three buttons for easy operation: **SET** button, **MIN/MAX** button, and **CH/+** button.

To enter the SET mode, press and hold the **SET** key for 3 seconds and 12/24 hour format starts to flash.

	Short press **SET** Key to skip entering into the following features and flash.	Press the **[+] or [-]** key to set up the following features.
1	12/24 Hour Format	12 hour or 24 Hour Format
2	Hour	Hour value up or down

3	Minute	Minute value up or down
4	Alarm Hour	Alarm Hour value up or down (While the alarm value is flashing, press and hold the **SET** button for three seconds to turn alarm ON and OFF.)
5	Alarm Minute	Alarm Minute value up or down (While the alarm value is flashing, press and hold the **SET** button for three seconds to turn the alarm ON and OFF).
6	Temperature Units	°F or °C
7	Max/Min Clearing	ON (Clears Daily) or OFF (Manually)
Press the SET key to exit the settings Mode.		

3.2.2 Console ALARM Mode

a. Alarm Defaults

Channel	Default Condition	HI ALARM °C(°F)	LOW ALARM °C(°F)
1	OFF	38(100)	15(60)
2	OFF	43(110)	32(90)

b.View and Set HI/Low Alarm

Note: The high and low alarms can be set for Channels 1 and Channel 2 only.

1) Press the **CH/+** button to switch the display between Channel 1 and Channel 2.

2) Press the **SET** button once, the HI/Low alarm and alarm icon ALARM will displayed.

3) Press and hold the **SET** button for 3 seconds, and the temperature **HIGH (Max)** alarm will flash.

4) Press the **[+] or [-]** button to increase or decrease the **HIGH** alarm. Press and hold the **[+] or [-]** button to change rapidly. While the alarm

value is flashing, press and hold the **SET** button for three seconds to turn the alarm ON and OFF . The alarm icon will appear when set, and disappear when disabled.

5) Press (do not hold) the **SET** button again to set the **LOW (Min)** temperature alarm. The **LOW** alarm for temperature will flash.

6) Press the **[+] or [-]** button to increase or decrease the **LOW** alarm. Press and hold the **[+] or [-]** button to change rapidly. While the alarm value is flashing, press and hold the **SET** button for three seconds to turn alarm ON and OFF. The alarm icon will appear when set, and disappear when disabled. Press SET button to confirm and exit.

3.2.3 Console Min/Max Mode

a. In normal mode, press the **MIN/MAX** button once and the MAX arrow will flash. Press the **MIN/MAX** button again and the **MIN** arrow will

flash.

b. Press the **MIN/MAX** button again to return to normal mode.

c. To reset the Max/Min values, press and hold the **MIN/MAX-** button for 3 seconds.

3.2.4 Console Channel Mode

a. Channel Selection

Press the **CH/+** button to switch the display between remote sensors 1 through 8, and scroll mode . In scroll mode, all of detected outdoor sensors will be displayed in five seconds intervals.

b. Sensor Search Mode

If any of the sensor communication is lost, **dashes (--.-)** will be displayed on the screen. To reacquire the signal:

1) If a specific channel is lost, press the **CH/+** button to display this channel, then press and hold the **CH/+** button for 3 seconds, and remote search icon  will be constantly displayed for up to 3

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

2) If new sensors are added, subtracted, or multiple sensor channels are lost, press and hold the **CH/+** button for 5 seconds (on any channels), and the remote search icon  will be constantly displayed for up to 10 minutes. Once the signal is reacquired, the remote search icon  will turn off, and the current values will be displayed.

3.2.5 Rate of Change Icon

The rate of change icon  detects rapid changes of remote temperature. If the arrow points upward, the temperature increases at a rate of +2°C(4°F) per 30 minutes (or greater), If the arrow points downward, the temperature decreases at a rate of -2°C(4°F) per 30 minutes (or less).

3.2.6 Temperature Calibration

1). Pool Sensor Temp Calibration

a. Prior to entering the calibration mode, press the **CH/+** button to select the pool temperature sensor(CH1-8) that you want to adjust.

b. To enter the temperature calibration mode, press and hold the **SET** and **CH/+** buttons at the same time for 5 seconds and the pool sensor temperature value will begin flashing. Press the **CH/+** button to increase the temperature and press the **MIN/MAX** button to decrease the temperature reading in 0.1° increments. To rapidly increase (or decrease) the temperature reading, press and hold the **CH/+** or **MIN/MAX** button.

c. To return the temperature to the actual or uncalibrated measurement, press the **SET** button.

d. Once the displayed temperature equals to the calibrated source, press and hold the **SET** button for three seconds, or wait 15 seconds for timeout,

and the temperature value will stop flashing.

2). Indoor Temperature Calibration

a. To enter the indoor temperature calibration mode, press and hold the **SET** and **MIN/MAX** buttons at the same time for 5 seconds and the IN temperature value will begin flashing. Press the **CH/+** button to increase the temperature and press the **MIN/MAX** button to decrease the temperature reading in 0.1° increments. To rapidly increase (or decrease) the temperature reading, press and hold the **CH/+** or **MIN/MAX** button.

b. To return the temperature to the actual or uncalibrated measurement, press the **SET** button.

c. Once the displayed temperature equals to the calibrated source, press and hold the **SET** button for three seconds, or wait 15 seconds for timeout, and the temperature value will stop flashing.

Note: The calibrated value can only be adjusted on the console. The remote sensor always

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

Calibration is only useful if you have a known calibrated source you can compare to and is optional. This section discusses practices, procedures and sources for sensor calibration to reduce manufacturing and degradation errors. Do not compare your readings to the sources such as the internet, radio, television or newspapers. They are in a different location and typically update once per hour.

Discussion: Temperature errors can occur when a sensor is placed too close to a heat source (such as a building structure, the ground or trees).

To calibrate temperature, we recommend a mercury or red spirit (fluid) thermometer. Bi-metal (dial) and other digital thermometers are not a good source and have their own margin of error. Using a local weather station in your area is also a poor source due to changes in location, timing (airport weather stations are only updated once per hour) and possible calibration errors (many official weather stations are not properly installed and calibrated).

4. Sensor Operation Verification

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

5. Best Practices for Wireless Transmit

Wireless communication is susceptible to

interference, distance, walls and metal barriers. We recommend the following best practices for trouble free wireless communications.

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

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

5.3.Line of Sight Rating. This device is rated at 165'(50m) line of sight (no interference, barriers or walls) but typically you will get 100'(30m) maximum under most real-world installations, which include passing through barriers or walls.

5.4.Metal Barriers. Radio frequency will not pass through metal barriers such as aluminum siding. If

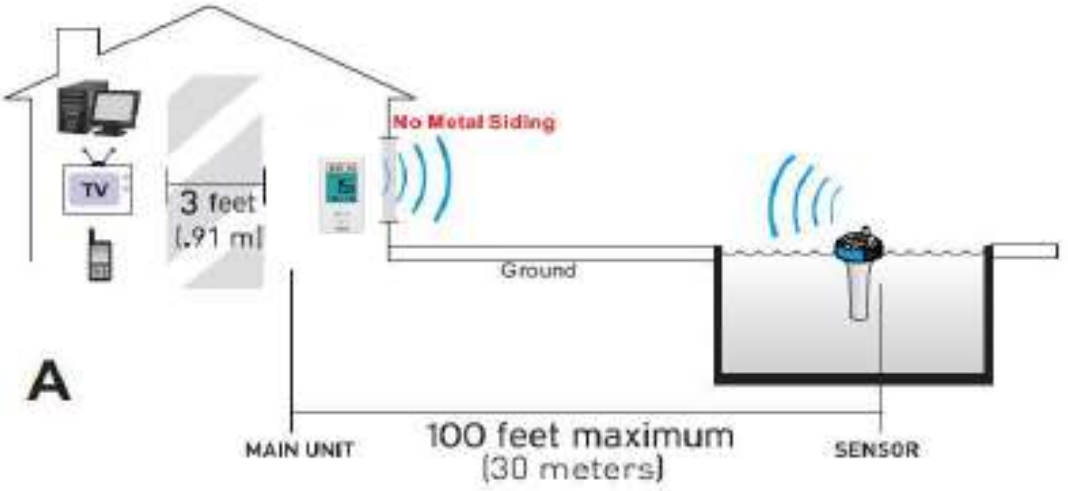
you have metal siding, align the remote and console through a window to get a clear line of sight.

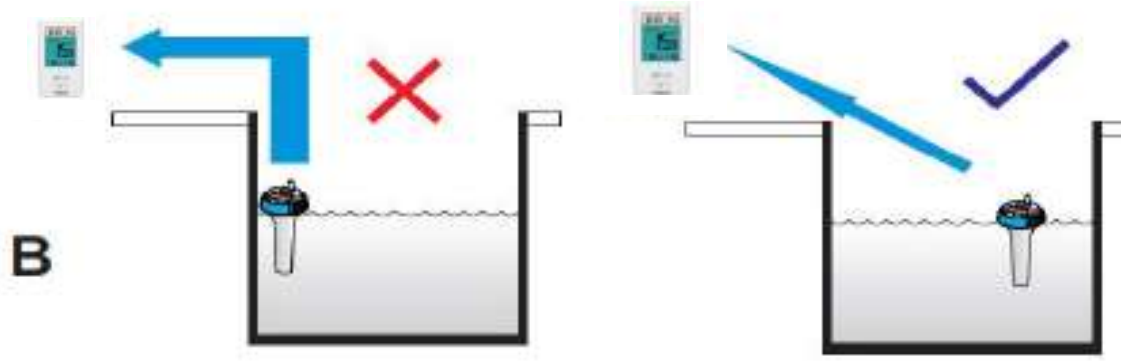
6. Wireless Pool Sensor Placement

6.1. Place the sensor in the pool or spa within 100'(30m) of the display console (**Reference A**). Avoid transmitting through solid earth or ground (**Reference B**).

6.2. Place the console at least 3' (0.91m)away from computers, TVs and wireless phones.

6.3. Avoid transmitting through solid metal barriers.





7. Pool Sensor Maintenance

During each battery change (1-2 years), we recommend applying waterproof silicon grease to the seals:

http://en.wikipedia.org/wiki/Silicone_grease

Silicone grease is available at most hardware and

pool stores.

Note: Not recommended for covered spas. Wireless signal will not penetrate solid metal or earth.

8. Specifications

8.1. Wireless Specifications

8.1.1. Line of sight wireless transmission (in open air): 300' (100m), 100' (30m) under most conditions.

8.1.2. Frequency: 433 MHz

8.1.3. Update Rate: 60 seconds

8.2. Measurement Specifications

Measurement	Range	Accuracy (Resolution)
Indoor Temperature	32 to 140 °F (0°-60°C)	±2°F/±1°C (0.1 °F/°C)
Outdoor Temperature	-40 to 140 °F (-40°-60°C)	±2°F/±1°C (0.1 °F/°C)

8.3. Power Consumption

8.3.1.Base station (display console): 2 x AAA 1.5V Alkaline or Lithium batteries (not included)

8.3.2.Pool sensor: 4 x AAA 1.5V Alkaline or Lithium batteries (not included)

8.3.3.Battery life: Minimum 12 months for base station. Intermittent reception and multiple sensors may reduce the battery life.

Minimum 12 months for pool sensor (use lithium batteries in cold weather climates less than -4 °F/-20°C)

9.Troubleshooting Guide

Wireless remote (thermometer) not reporting in to console. There are dashes (---) on the display console.
Solution

If any of the sensor communication is lost, dashes (--.-) will be displayed on the screen. To reacquire the signal, press and hold the **CH/+** button for 3 seconds, and the remote search icon  will be constantly displayed. Once the signal is reacquired, the remote search icon  will turn off, and the current values will be displayed.

The maximum line of sight transmission range is 300'(100m) and 100'(30m) under most conditions. Move the sensor assembly closer to the display console.

If the sensor assembly is too close (less than 5'/1.5m), move the sensor assembly away from the console.

Make sure the pool sensor LCD display is working and the transmitter light is flashing once per 60 seconds.

Install a fresh set of batteries in the remote thermometer. For cold weather environments, install the lithium batteries. Make sure the remote sensors are not transmitting through solid metal (acts as an RF shield), or earth barrier (down a hill). Move the display console around electrical noise generating devices, such as computers, TVs and other wireless transmitters or receivers. Move the remote sensor to a higher location. Move the remote sensor to a closer location.
Indoor and pool sensor temperature do not agree in the same place
Solution
Allow up to one hour for the sensors to stabilize due to signal filtering. The indoor and pool sensor temperature should agree within

4°F/2°C in the same place(the sensor accuracy is ±2°F/1°C). Use the calibration feature to match the indoor and outdoor temperature to a known source.
Display console contrast is weak
Solution
Replace console batteries with a fresh set of batteries.