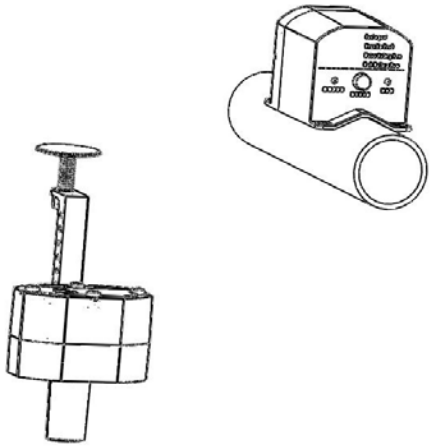
SMART METER™
FILL SYSTEM

Model # WS-2000
Wireless Water Auto-Leveler System



The SmartMeter technology is a breakthrough in Auto-Leveler systems. Kona Labs has included a high quality Toro Professional water valve. We have tested this valve with our valve controller and feel that it gives great results. At Kona Labs we are committed to customer satisfaction. If you are not satisfied in any way, or are experiencing any difficulties, please feel free to contact our technical team for assistance. We have tried to keep these instructions as simple as possible. Please read these directions carefully.

Read ALL INSTRUCTIONS BEFORE setting up and using this product

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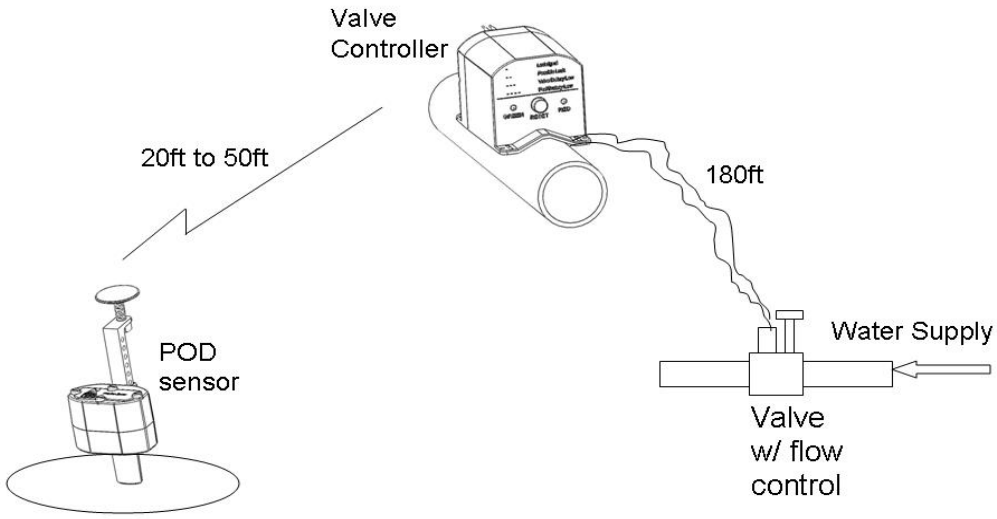
The SmartMeter Fill System

The SmartMeter was invented to help solve problems associated with manually filled pools. This system has three major components. These components are the **Pod Sensor**, the **Valve Controller** and the remote **Water Valve**. A Toro Professionals Series valve is included with the system to help insure success. The Toro valve specifications allow more than 180 feet of 18GA wire. Combined with typical radio transmission ranges in excess of 20 feet you should have over 200 feet of distance between the “Pod Sensor” in the pool and the “Water Valve”.



Three major components - Pod Sensor, Valve Controller and remote Water Valve

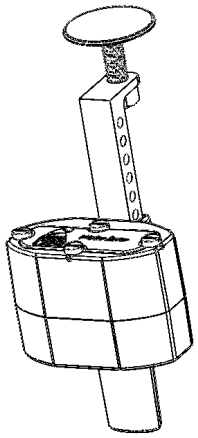
Overview of the SmartMeter Fill System

The System works by sending water level signals to the remote controller. The “Pod Sensor” sends wireless signals by radio to the nearby “Valve Controller”. The Valve Controller receives the level signal and operates the “Water Valve”. Upon installation, the Valve Controller is programmed for a preferred “set level”. The “set level” for the “Pod Sensor” should be at the same level as the preferred level of operation for your pool and spa. This level should also coincide with the suggested level of the water line at the Pod Sensor finger. All of this is explained in this manual.

The SmartMeter Fill System has two modes of operation. MODE 1 provides a continuous auto-fill function and MODE 2 is considered a water saver mode. Mode 1 measures water level and updates Water Valve every 10 minutes, 24 hours a day. Mode 2 measures water less frequently. Mode 2 “sleeps for 23 hours each day and only takes measurements during one hour of “wake” time. During the fill cycle “wake” hour, water level measurements and Water Valve updates occur 6 times, once every 10 minutes. During installation the fill cycle “wake” hour is predetermined and programmed by you.

The SmartMeter Fill System was intended as an upgrade for pools that currently do not have an auto-fill system or an auto-leveler. The SmartMeter can also upgrade pools with float-type mechanical auto-fill systems.

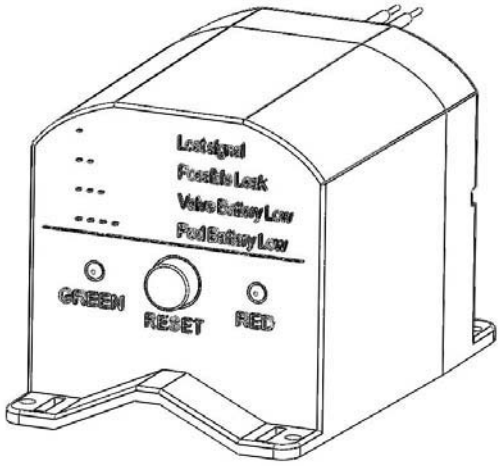
Pod Sensor



The Pod Sensor measures the water level. It fits under a deck lid. Refer to Installation Instructions for more specific details on installation options.

Valve Controller

The Valve Controller receives the wireless signal from the Pod Sensor and operates the Water Valve accordingly. The Valve Controller is your only programming interface. On this controller are a RESET button along with a GREEN LED and a RED LED. The Valve Controller contains 6 “AA” batteries.



This figure shows a drawing of the programming interface of the Valve Controller

Water Valve

A Toro Professional 1" Valve is included with the SmartMeter Fill System. This valve has a variable flow function. The Water Valve allows you to have some control over the volume and flow of water sent into the pool, spa or water feature.

The Toro Professional Water Valve included can deliver a wide range of flow requirements. This valve can reliably deliver as little as 0.1 gallons per minute.

MODE TYPE	FLOW	MAXIMUM MIN/DAY	MAXIMUM GAL/DAY	MINIMUM GAL/DAY
MODE 1 Rapid Auto-Fill	0.1 gal/min	1440	144	0
MODE 2 "Water Saver" Mode	0.1 gal/min	60	6	0
MODE 1 Rapid Auto-Fill	40 gal/min	1440	57600	0
MODE 2 "Water Saver" Mode	40 gal/min	60	2400	0

This data table is provided for reference only. Data is based on specifications from Toro on the 1" female NPT and for the TPVF100DC at typical line pressures. Your installation will be different. For installation consult a plumbing professional.

Pre-Installation Decisions

CHOOSE Mode 1 or Mode 2
Mode 1 is considered a continuous auto-fill method. Mode 2 is considered the "water saver" method. This is an important feature of the SmartMeter WS-2000. Mode 2 allows for a water loss indication and automatic water shut off. There is no water loss detection or automatic shut off capabilities for Mode 1.

MODE 1 - rapid auto-fill mode (No Water Saver Function)

- ***Every 10 minutes measures water level and updates valve***
- ***Water Valve turns off only if Pod Sensor signal is lost or batteries low***

MODE 2 - regular fill mode. ("Water Saver")

- ***23 hours a day does NOT take measurements***
- ***1 hour per day measures water level and updates valve 6 times (Once every 10 minutes during hour of wake time)***
- ***Water Valve automatically shuts off if "set" level is not achieved for three consecutive days***

If SmartMeter detects that set level was not achieved for three consecutive days it shuts off the Water Valve and the RED "error" LED light flashes. This indicates a possible water loss or leak. This automatic shut-off function is intended to save water and to inform you of a possible water loss. Visual observation of pool water level and/or confirmation of any water loss by a pool professional should be considered. A RED error LED light alarm forces a manual RESET of the system.

CHOOSE Volume of Water Flow into your water leveling system

The Toro valve can be adjusted to deliver only 0.1GPM or as much as 40GPM. This variable flow function of the Toro Water Valve allows you to determine the volume of water delivered to your pool, spa or water feature during fill times. This volume control also allows you to adjust the sensitivity of the Mode 2 "water saver" alarm. For example at maximum capacity of the Valve (40GPM) it would take more than 2400 gallons of a leak per day to trigger the water loss alarm. At the minimum of 0.1GPM a loss of over 6 gallons per day will trigger the alarm. The choice of water flow is important when setting alarm thresholds. It is recommended that you conduct a flow volume test of your installation and provide a reasonable threshold setting. A simple process may be as follows:

1.) With supply connected to Toro valve at expected operational pressure measure the time in seconds it takes to fill a 5 gallon bucket.
2.) Divide 5 by number of seconds to get gallons per second
3.) Multiply gallons per second by 60 to get gallons per minute
4.) Multiply gallons per minute by the maximum minutes per day in MODE 2

This number is the number that if your pool, spa or water feature can lose per day and not trigger a water loss alarm. You can adjust this rate by adjusting the flow volume on the Toro valve. You can manually activate the toro by using the bleeder screw on the side of the volume adjustment.

A sample equation. On our installation it took us 120 seconds to fill a five gallon bucket

Time to	
fill a 5 gal.	
bucket	
Seconds	120
Gal/sec	0.04
Gal/min	2.5
Gal/day	150

In this example 150 gallons per day will be delivered in MODE 2 water saver mode. If water consumption for any reason is greater than this over an extended period it could trigger a water loss error.

CHOOSE Preferred Water Level

Determine the preferred operational water level for your pool, spa or water feature. This “preferred water level” will be set during installation at the time you first press the RESET button to program the SmartMeter Fill System. The pool, spa or water level needs to be filled to the preferred level at the time of installation.

Installation of the SmartMeter Fill System

Before installation, read the entire manual and follow all instructions

Before beginning these installation procedures make sure that your pool, spa or water feature is filled to your preferred operational water level.

- Install the "Pod Sensor" when the pool, spa or water feature is at your preferred operational water level. This ensures an accurate "set level".
- It is preferred to have little or no activity in the pool/spa during installation.
- During installation it is preferred that the water pump is in the same mode as it will be during the fill cycle. For example, if the water pump is "on" during the fill cycle then the water pump needs to be "on" during installation. Likewise, if the water pump is "off" during the fill cycle then the water pump needs to be "off" during installation.
- For MODE 2 "water saver" it is recommended to install the system is off for at least 60 mins. before and 60 mins. after the fill cycle "wake" hour.
- For MODE 2 it is preferred to select a fill cycle "wake" hour when people are not expected use the pool or spa.

WHAT IS NEEDED:

1.) Standard screwdriver
2.) 10 AA batteries
3.) Silicon grease

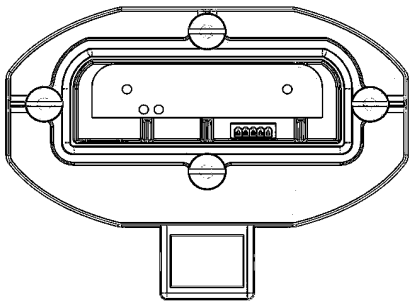
ORDER OF INSTALLATION of the SmartMeter Fill System

1.) Determine and prepare any and all plumbing needs for water supply
2.) Install Pod Sensor unit
3.) Install Valve
4.) Mount Valve controller
5.) Connect Valve controller to valve
6.) Program Valve controller

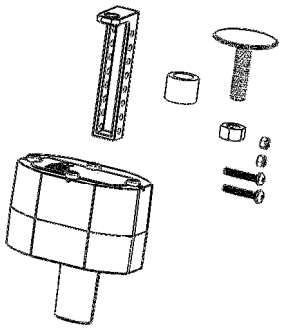
The Installation of the Pod Sensor unit

1) The Pod Sensor unit can be mounted under any deck lid with a ½" hole. A hole in the center generally works best. Use the spacers and hardware provided.
2) It is IMPORTANT to decide what MODE to operate in. Install the Pod Sensor under the conditions expected during ***the programmed fill time.***
3) Insert batteries into the Pod sensor

Using a standard screwdriver loosen the stainless steel screws holding the battery door onto the POD sensor body until you can get the battery door off. Be extremely careful not to lose or damage the gasket under the battery door. Insert four new long life “AA” batteries in the POD sensor. Observe proper polarities for batteries and plug it into the power header. Once connected, put the carrier back into the battery compartment tucking all the wires in neatly. Be sure to place the battery carrier as shown below in the top view of the Pod sensor with the curved sides on the same side matching the battery compartment curved sides.



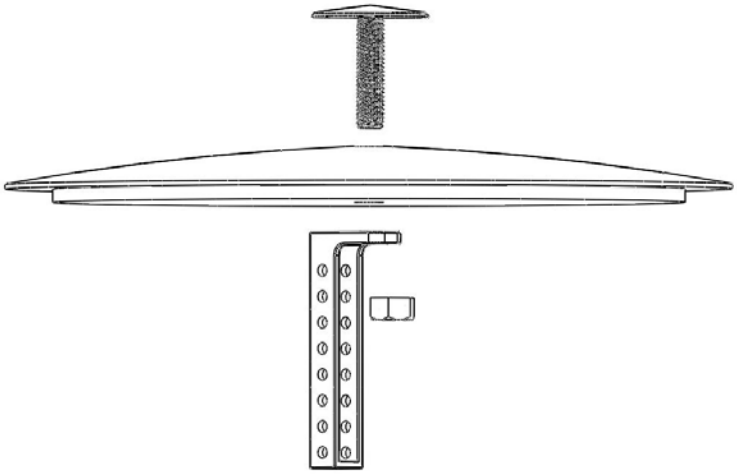
Replace the battery compartment lid and be sure gasket is in place. Use the silicon grease on the gasket to help insure a good water resistant seal. Screw the lid down being sure not to over tighten screws but seating the battery lid and screws firmly and evenly. When screwing down the battery compartment lid, be sure to clear all wires and insure the gasket is in place. The screws should be snug and not over-tightened. The battery compartment lid should not be warped.



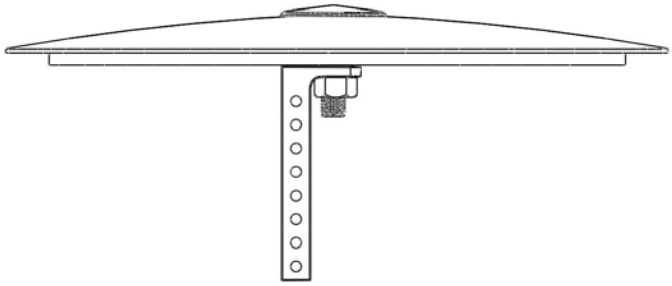
Exploded view of POD sensor and mounting hardware.

Installation Progress Review:

At this point the batteries are installed, the carrier is plugged into the battery/programming power header in the battery compartment and the battery compartment is sealed and tight using the battery lid and four stainless steel screws. Now, using the large plastic Cap bolt provided put the cap bolt through the ½" hole in your lid and if needed use the spacer before placing the mount ladder onto the Cap Bolt to insure it is secure. Screw the nut onto the cap bolt to secure the mount ladder to the lid.

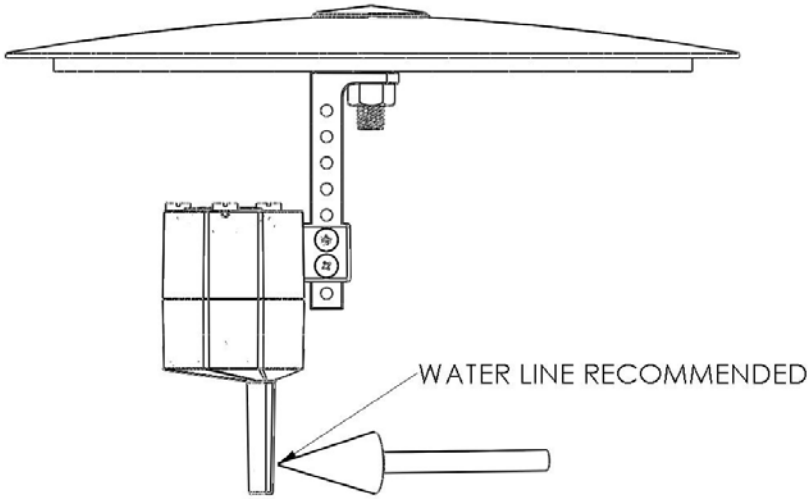


The large cap bolt goes above the deck lid.



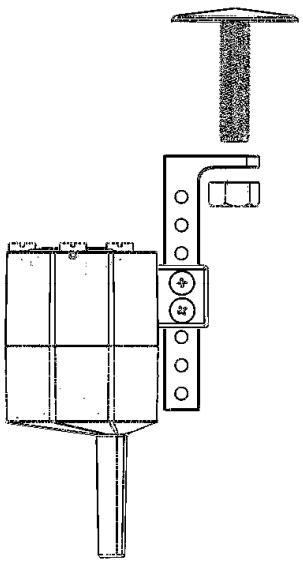
The fully mounted ladder assembly waiting for POD sensor should look like this.

Measure the distance from the lid bottom to the water level carefully during set up so that the POD sensor will be mounted at the correct level with respect to the surface of the water. Set up the Pod sensor only when the water is at the desired operational level. The recommended water line on the Pod sensor is 0.5 inches to 0.7 inches from the bottom of the Pod sensor finger as shown below.



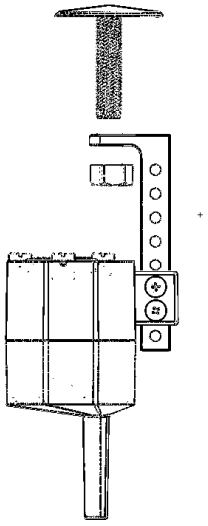
Using the two supplied nylon machine screws and the two small nylon nuts, mount the POD sensor at the correct height in the skimmer onto the mount ladder. Be sure to mount the POD so that the water line is at or near the recommended level. There is no need to be exact but it is a good idea to get as close as possible to the recommended water line when the lid is in place.

With the pool at operational level, check to be sure that when the lid is in place and seated the POD sensing finger is at the right depth in the water. Be sure that the equipment is operating as it will during fill cycle times. After adjusting the depth and securing the POD sensor to the mount ladder using the supplied nylon mounting hardware, place the POD sensor into the skimmer so that the lid is seated properly in the skimmer deck top rim. Now we can set up the Valve and then the Valve Controller. Fasten the deck lid to secure the deck lid properly.



Alternative POD sensor Mounting

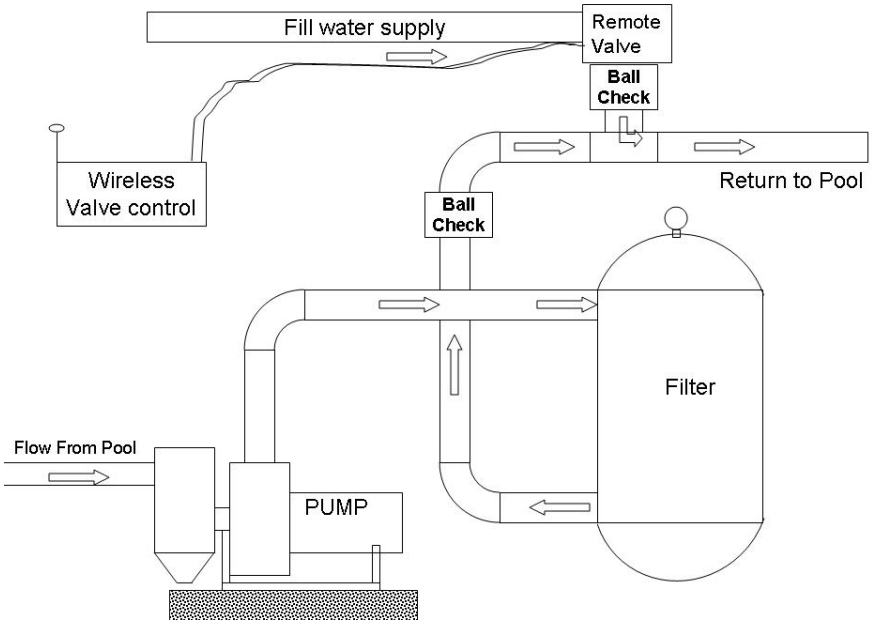
There are alternative mounting options if needed. The image above shows the typical offset mounting ladder position. This offset position allows for mounting the POD offset of center. For smaller diameter holes or for more on-centered mounting, you can also turn the mount ladder 180degrees to look like the image below.



This mounting configuration is helpful if you are placing the POD sensor into a smaller diameter hole.

4b. Valve Installation

Install the Toro Valve being sure to observe the flow direction through the Valve and to observe all codes where applicable. We recommend using backflow prevention devices and pressure regulation devices where code requires or simply prudent for reliable water flow, filter backflow protection, equipment needs, and most importantly human protection measures. We recommend using a properly pressure regulated water supply provided to the valve and then plumbed to your pool or water feature through a one way check valve.



Once you have determined your water supply arrangement and plumbed in the remote valve, you can mount the valve controller where it can receive a strong signal from the Pod sensor. After you mount the Valve controller You will need to run wires from the Valve controller to the solenoid on the valve. The next step is to locate a suitable mounting position based on signal strength for the Valve controller.

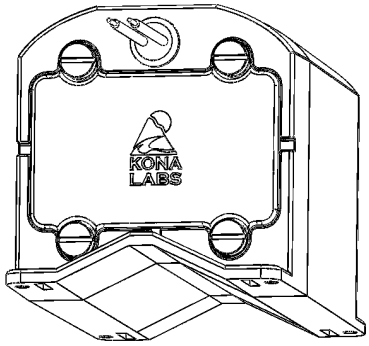
4c.) Valve Controller Installation

Installation Progress Review:

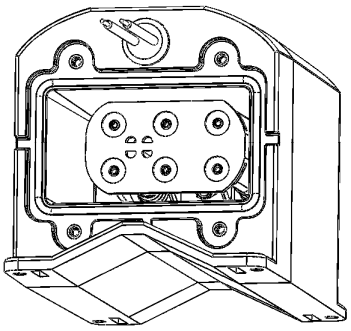
At this time the POD sensor is mounted has power and the POD sensor is sending a signal waiting for the Valve controller. You have installed the Valve where you want it and it is less than 200ft from the pool. (Valves more than 200ft away are possible but may reduce performance and battery life)

Power up the Valve controller and find signal:

Install the batteries into the bottom of the Valve controller unit. First Remove the four screws holding the battery cover in place on the Valve controller unit. The battery door side is the bottom of the Valve controller unit. It is opposite the LED indicator lights and the RESET button. This is also the same



side where the RED and BLACK valve solenoid wires exit the unit. Removing the battery compartment reveals the 6AA battery holder and power connector.

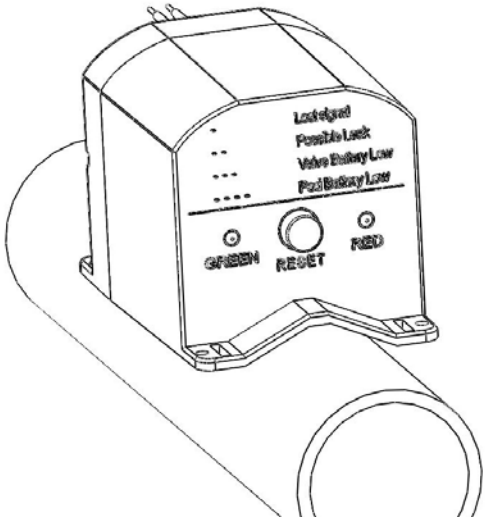


Fill the battery holder with 6 new long life AA batteries, connect the power connector header and insure that lights are flashing and then put the battery cover back on being sure gasket is in place and all wires are tucked in. now is a good time for some silicon grease on the gasket. Once the battery door is secure check again to see that at least the green LED is flashing.

The flashing GREEN and RED LEDs tell you what is going on.

At this time the Pod sensor should be installed, powered up and at operational water level. If the Valve controller is within range only a GREEN light will flash every second to show signal strength of Pod sensor signal. Like bars of signal on your cell phone more bars the better. Four bars max. A Flashing RED and GREEN LED's indicate no POD signal found.

You may need to move closer to the POD sensor to get a green signal indicating reception. The signal strength is denoted by the number of green flashes. Four flashes in about four seconds is strongest, One flash is weakest. The signal indication is not instantaneous so give some seconds for signal to be acquired in each location. Line of sight is best and higher is usually better. Again, No signal is denoted by rapid green and red flashing. Once a good strong signal is found in a suitable mounting location mount the Valve controller. Run wires as needed to the valve location using 18GA wire and being sure to maintain polarity to be sure off is OFF and on is ON!



You can mount the POD near the Valve on a pipe in a protected location as long as the green light is flashing a good signal. If you do not have good signal strength move the valve controller closer to the POD sensor until you do have good signal. Another way to improve reception is to raise the Valve controller to a higher position relative to the POD sensor. The line of sight strength of the radio is hundreds of feet. In a hole in the ground the distance is greatly reduced. The wires to the solenoid from the Valve controller can be in excess of 180 feet.

When the Valve controller is mounted on a pipe or wall connect the Valve controller to the solenoid of the valve. It is recommended that direct bury or waterproof wire-nuts be used to connect the valve solenoid to the Valve controller unit. Corrosion at these connections will reduce operational lifetime of batteries and may alter function of solenoid as a result of voltage drops across corroded connections. Use 18GA or heavier stranded wire.

Installation REVIEW Getting Ready to Program.

The Valve should already be installed at this time with water supply. The POD sensor should be installed in pool at the right depth. The Valve controller is mounted and connected to the valve solenoid and is showing green lights indicating good signal from the POD sensor.

Programming MODES of operation

At this time the we are at the Valve controller and it is giving a green light indication of signal strength every few seconds. Press the RESET button one time and one time only. **STOP**

The GREEN LED will now give a quick flash 11 times indicating the POD sensor is reading the operational or set level of the pool. This will be set level. After the set level is recorded the RED LED lights up steadily indicating that set level is achieved and the unit is ready for the next button press. This RED light will be active for 3 minutes waiting for next button press to move into MODE2 programming. If no additional RESET button presses are received within three(3) minutes MODE 1, continuous autofill, is set as the active mode. MODE1 is a continuous operation updated every 10 minutes. There is no water saver function in this mode. Proceed only if MODE 2 operation is desired.

If the RESET button is pressed after set level and before RED LED is off, each time it is pressed counts as a 1 hour delay before MODE2 autofill mode cycle begins.

Zero time is recorded at the first RESET button press at the same time set level is recorded.

Each RESET button press after the set level period delays the start time of the fill cycle in MODE2 by one(1) hour from Zero time.

You have 3 minutes to start the delay time entries as shown by the RED LED.

Once you start entering delay hours, you have 30 seconds to continue the delay hour button press entries. The maximum number of hours of delay is 24 hours. The counter starts over after the 24th hour is entered.

A Programming Example

I want to program MODE2 operation with a 1 hour fill cycle that will begin at 0400 in the morning. This is when my equipment is off and no one is likely to be in the pool.

We are installing the SmartMeter fill system for this pool after lunch time at 1300hrs. Since the pool is not expected to be running we should turn it off now to allow some time for equilibrium levels to be reached. If we need to fill or drain the pool to achieve ideal operational levels we need to do that first before installing or mounting the POD sensor.

Assuming we are ready to go and the POD sensor is mounted and we are programming the Valve controller; if your first button press for programming is at 1300hrs, Zero time recorded is 1300 hours and the Set Level is what it was on the POD sensor finger at that time too. If we were leaving it in MODE1 continuous autofill operations we would do nothing more. However, we want MODE2. We want MODE2 to fill every morning at 0400. Now we have 3 minutes after we set level and set zero time before the RED LED goes out. We need to

start pressing our hours of delay input in three minutes. Since we want the SmartMeter to wake up in 15 hours from zero time we would need to press the RESET button 15 more times. This is 15 times AFTER the first RESET button press that started the operational level set process and established Zero time.

In about 30 seconds after we are done pressing our hours of delay, the RED LED will go off and the GREEN LED will flash back to you the number of hours of delay recorded from Zero time and then go to sleep. All done.
Every morning now at 0400 the SmartMeter fill system will wake up and for one hour work to level the pool. Every 10 minutes starting at 0400 the pool will be checked and the Valve turned on or off depending on leveling needs.

Special Notes for MODE2

MODE 2 has a special water saver feature. If after three days of trying to achieve set level with no success an possible leak error code will activate. This turns the valve off and causes the RED LED to flash twice. A reset is possible after receiving this error code. A RESET button press will start the programming at the set level stage of the process and reprogramming will be required to set delay for MODE 2 operation. Be sure you are filled to operational level before pressing the RESET button from possible leak error code.

5.) Care of the SmartMeter

The SmartMeter was designed to be tough. However it is not capable of handling abuse. Be careful when removing the smart meter from the pool and be sure to place it back to where it was so that set level can be maintained. Be careful not to damage the sensing finger. Keep the sensing finger clear of debris. Debris in skimmer baskets can alter level readings. Wipe unit down and check frequently for signs of damage. The sensing finger needs to be clean to work properly.

5a.)SAFETY WARNINGS

Read all WARNING and NOTE messages prior to setup and use.

FOR MAXIMUM SAFETY AND PERFORMANCE, THE CUSTOMER MUST COMPLY WITH ALL WARNING NOTICES BELOW.

• The SmartMeter Fill System is not a toy.

• The SmartMeter Sensor pod and Valve controller should be stored out of freezing conditions.

• Misuse or abuse of the SmartMeter can result in damage to the sensor and/or the plastic body housing the sensor..Do NOT jump on, strike, hit, kick, throw, or submerge the POD sensor or valve controller. Do NOT use the sensor to hold up the deck lid when removed.

• The SmartMeter sensor is NOT a safety device and is not intended to be used as a flotation device.

• The SmartMeter does NOT monitor human or pet activity in the pool.Children should NEVER be left unsupervised in a pool or spa.

• Dispose of batteries properly

Failure to comply with ALL Safety Warnings could void warranty.

The SmartMeter was made to be mounted under a NEW Skimmer lid manufactured and tested with a hole in it already. We recommend that you buy one of the many new ones with a hole in it already and not try to make your own hole. We do not accept any responsibility for mounting decisions made by installers. Mounting it anywhere else is an experiment and we cannot be held responsible for the results. We encourage utilization of simple and sound mounting options but we can't take responsibility if it does not work. We do not recommend altering any skimmer lid. We cannot take any responsibility for the structural integrity of any skimmer lids or any deck lid or pool or spa features modified or not. Please use caution and common sense when mounting the SmartMeter system to any surface. Do not use if broken. Do not use old deck lids. Use only NEW deck lids. Do not mount SmartMeter where it is exposed to swimmers, animals or protruding from fixtures or anywhere that may pose a hazard to humans or pets. The SmartMeter is not a toy. Do not mount the Valve controller where it is likely to be exposed to harsh elements. Shelter the Valve and valve controller and hide from the reach of children to avoid tampering and to prolong life of system. The Valve and Valve controller are easily mounted in any position and can be located in different and remote locations. Wires running in between them should be connected using a water proof direct bury type wirenut assembly. Wires should be run in accordance with proper standards and codes. If any part of the plastic housing is broken accidentally discard immediately and avoid sharp edges. Inspect Skimmer and other deck lids monthly for fractures and weakening. Replace as required. Be sure to secure the deck lid down with the factory screws to avoid tampering and insure accurate leveling. Please follow all applicable local laws and codes if any pertaining to the installation of this product.

6c. Regular Care and feeding

Be sure to check the POD sensor every time you clean the skimmer basket. It is simple operation to take the POD sensor out of the skimmer and give the POD body and POD sensor finger a quick wipe with a clean soft cloth to keep it shiny, new and sensing properly. Also be sure to place the lid back securely using factor supplied fasteners for that skimmer lid.

6. RECEIVER PROGRAMMING Quick Reference Guide

1.) Put batteries in POD sensor

2.) Mount POD in position at operational level in pool

3.) Put batteries in Valve controller

4.) Find best Signal. GREEN BARS= Good. RED+GREEN = No signal

5.) Mount Valve Controller

6.) Plumb in Valve

7.) Connect Valve to the Valve Controller maintaining polarity

8.) For MODE 1 continous autofill mode simply press the RESET button once and STOP. RED light comes on for 3 minutes waiting for MODE 2 users to enter MODE2 programming.

9.) For MODE 2 users. After you have pressed RESET button once the POD sensor recorded set level for 11 seconds. A green light flashed 11 times to indicate POD sensor water set level measures. Zero time was recorded. A RED LED is now on for 3 minutes waiting for you to set the hour of fill operations under MODE2

10.) Before the three minutes is up PRESS the RESET button once(1) for each hour later from zero time you want the fill mode to begin. Each button press after the first button press gives you one hour later. You have 30 seconds to keep going after the last button press.

11.) 30 Seconds after last button press in step 9a the red light will go out and the green light will flash the number of hours of delay from start time to confirm the right fill cycle time.

NOTE:

IF the time is not right in step 10 above you will need to start the programming over by first removing the POD sensor power then the Valve controller power then powering first the POD sensor and then the Valve controller in that order.

7. TROUBLE SHOOTING GUIDE

IMPORTANT: Prior to troubleshooting an error code, recycle the power FIRST and reset the system being sure that the Valve controller is seeing signal where it is mounted.

To recycle the power, unplug the POD sensor battery pack. Unplug the Valve controller battery pack. Plug in the POD sensor battery pack and install battery lid. Install POD sensor into POOL and be sure water level is up to operational level and that this level is at recommended level. Plug battery pack into Valve controller and insure good radio signals. Install battery lid to valve controller. Reprogram system.

RECEIVER MESSAGE	POSSIBLE CAUSES	SOLUTIONS
Lost Signal Error	Receiver is NOT within a 50 foot direct line of sight of the floating unit.	Move mounting position of receiver closer or higher relative to POD sensor position by extending valve controller to solenoid wire length
	Low battery power	Replace batteries
	POD sensor is at edge of skimmer lid	Rotate skimmer lid 180 degrees
	Receiver is mounted too low to ground	Raise receiver mounted position
Possible Leak error	Forgot to make up backwash water	Reset system
	Equipment is coming on during fill time in Mode 2	Reset system and change time of operation to coincide with equipment off time.
	Set up during different conditions than fill conditions	Set up system under conditions similar to fill time conditions.
	If you are still receiving this message.	Contact Kona Labs

Valve Won't turn on	Batteries are low	Make sure that the floating unit is not near your floating chlorinator which would cause higher than normal readings. Move floating unit to a different part of pool. Unplug the receiver, wait 10 seconds and plug the receiver back in.
	Solenoid is stuck closed	Unplug the receiver. Pull the floating unit out of the water, tip on its side and place it in a different location in your pool away from your return jets. Plug the receiver back in.
	Water supply is off	Take a test sample of pool water to confirm reading. If necessary, add the appropriate chemicals to bring your pool back into this range. Then unplug the receiver, wait 10 seconds and plug the receiver back in.
	If you are still having trouble	Contact Toro
Valve Wont turn off	The solenoid is loose or malfunctioned	Turn water supply off and unscrew solenoid. Clean and replace being sure plunger is in the extended or out position. If valve continues to remain leak then replace diaphragm or valve
	The diaphragm is damaged	Replace diaphragm or complete valve with a Toro TPV100DC
	Solenoid is stuck	Cycle power in the Valve controller. If solenoid shuts off cycle Pod power and reprogram system
Rapid green LED	On board radio	Contact Kona Labs

8. GLOSSARY OF TERMS

The following is a glossary of terms pertaining to pool water chemistry.

POD Sensor	The sensing unit located in the pool that sends a signal of water level information to the Valve controller unit.
Deck Lid	A lid in a pool spa or water feature deck that covers typically a skimmer or a bucket in place under the deck for an autofill feature.
Possible Leak	An alarm indicated by the SmartMeter in MODE2 only. This alarm is triggered by three consecutive days not achieving operational level. Requires manual RESET. Indicated by two RED LED flashes in error code.
Set Level	This is the level of operation that the SmartMeter records at the beginning of programming upon the first button press. Set level measures are indicated by green flash of LED 11 times after first button press. This is the level the SmartMeter attempts to achieve during fill operations.
Zero time	Time of first button press. This time coincides with set level time and is the basis time for delay time recorded in RESET button press greater than one.

9. LIMITED WARRANTY STATEMENT

The manufacturer warranties safe operation and reliability only under the following conditions:

• The product is installed and operated according to the assembly and operating instructions.

• Only original replacement parts are used.

• Consumable parts do NOT fall under the warranty

General Terms

This Limited Warranty applies to the enclosed product (the “Product”) distributed by Kona Labs LLC, an Hawaii corporation (doing business as Kona Labs).

Kona Labs warrants that the Product will be free from defects in materials and workmanship under normal use for a period of one (1) year from the date of purchase.(Your dated sales or

delivery receipt, showing the date of your Product purchase, is your proof of the purchase date.) During the warranty period, Kona Labs will repair or replace any defective parts at no charge.

All defective parts that are replaced by Kona Labs will be replaced, at Kona Labs discretion, with either new parts or used parts that meet or exceed performance specifications for new parts. All parts removed from the Product under this warranty will become the property of Kona Labs. Repair or replacement of any parts will not serve to extend the one (1) year warranty period.

This Limited Warranty does not apply to expendable parts. This Limited Warranty does not extend to any product (a) from which the serial number has been removed or (b) that has been damaged or rendered defective (i) as a result of accident, misuse, abuse or other external causes; (ii) by operation outside the usage parameters stated in the manual that shipped with the Product; (iii) by the use of parts not manufactured or sold by Kona Labs; or (iv) by modification or service by anyone other than Kona Labs or an authorized Kona Labs distributor.

If a defect is identified within the warranty period, please contact Kona Labs.

EXCEPT FOR THE LIMITED WARRANTY SET FORTH ABOVE, Kona Las EXPRESSLY DISCLAIMSALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, ORAL OR STATUTORY (INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE). ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW ARE LIMITED TO THE TERMS OF THE ABOVE LIMITED WARRANTY.

Limitation of Liability

EXCEPT FOR THE LIMITED WARRANTY DESCRIBED ABOVE, IN NO EVENT WILL Kona Labs HAVE ANY LIABILITY OF ANY KIND WHATSOEVER (WHETHER UNDER CONTRACT, TORT, OR ANY OTHER THEORY OF LEGAL LIABILITY) TO ANY PERSON WITH RESPECT TO THE PRODUCT (INCLUDING, WITHOUT LIMITATION, (A) ANY USE OR MISUSE OF THE PRODUCT, (B) ANY FAILURE OR MALFUNCTION OF THE PRODUCT, (C) ANY BODILY INJURY, DEATH, LOSS OF OR DAMAGE TO ANY PROPERTY, OR ANY OTHER DAMAGES RELATED TO OR RESULTING FROM THE PRODUCT OR ITS USE (INCLUDING, WITHOUT LIMITATION, ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, LOST PROFITS, LOSS OF USE), EVEN IF Kona Labs OR Kona Labs AUTHORIZED REPRESENTATIVES HAVE BEEN ADVISED OF THE POSSIBILITY OF ANY SUCH DAMAGES.

Severability

Any provision of this Limited Warranty which is prohibited or unenforceable in any jurisdiction will, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining portions hereof or affecting the validity or enforceability of such provision in any other jurisdiction.

Venue and Choice of Law

This Limited Warranty is applicable in all countries. This Limited Warranty will be governed by the laws of the State of Hawaii (regardless of any conflict of laws rules), and any disputes arising from this Limited Warranty will be resolved in Kailua Kona, Hawaii

Entire Agreement

This Limited Warranty is understood to be the complete and exclusive agreement between Kona Labs and the purchaser of the Product, superseding all prior agreements, oral or written, and all other communications between such parties relating to the Product.No employee or representative of Kona Labs or any other party is authorized to make any warranty in addition to the limited warranty set forth.

MPORTANT DO NOT RETURN PRODUCT TO STORE

For technical assistance and missing parts, contact Kona Labs

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P.O. Box 4037

Kailua-Kona, HI 96745
Patent Pending
fax: 808.331.0637
email: smartmeter@konalabs.com
www.konalabs.com

3.) What your Smart Meter CAN NOT do

Your SmartMeter can not stop leaks from happening or tell you where leaks are at. Although splash resistant, the SmartMeter is not made to be mounted in areas where it might become submerged. The SmartMeter is programmed to turn the water off to the pool spa or water feature on any error detected. Always keep observing pool level to be aware of this situation. Do not leave pool, spa or water feature unattended for long periods without observing water levels. The SmartMeter could turn the water off for a number of reasons. We cannot protect your equipment. The SmartMeter will not operate again after an alarm or error until you RESET the Valve controller. Always visually check your water level. It was intended that the SmartMeter would not continue to fill a pool that develops a leak. Float type autofill systems do this and it can result in a high water bill. It is part of the SmartMeter early failsafe water saver feature to turn the water off. The SmartMeter has error codes to help you determine why water was shut down. Pumps can run dry when water level drops so be aware of any water level reduction as this is a sign of a fill error. The SmartMeter will not protect your pump, heater or any other pool related equipment from malfunction by operating without enough water in the pool, spa or water feature. The only way to insure that there is enough water in the pool for proper operation is to visually observe that there is water in the pool at operational level on a daily basis.

Range
Getting radio signals out of holes is not easy and our radio is as strong as FCC regulations allow it. Line of sight the radio performs well but when you stick it in a hole the distance fades rapidly. During set up you can determine signal strength to help make a good and relable decision on where to set up the Valve controller. Make sure you have good signal before you mount the Valve controller. There are many options to extend range with the SmartMeter technology. If you have a need to go through lots of structures or achieve a greater distance please call and let us help you. One advantage is that the SmartMeter is 100% battery operated and can operate the valve over 180 feet away. Battery life of the Valve controller may be sacrificed for distances of greater than 200 feet. If you have any signal issues we may be able to help. Depending on your particular installation, number of needed valve operations per day and mode of operation selected battery life could be reduced to less than one year of operation. Battery power can also be reduced when operating in MODE 1 continuous mode.

10. FCC STATEMENT

1. 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.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC ID: X8CWS-2000

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.

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.

KEEP THIS MANUAL

For technical assistance see us at www.konalabs.com

IMPORTANT DO NOT RETURN PRODUCT TO STORE

Please visit www.konalabs.com for the updates and installation video