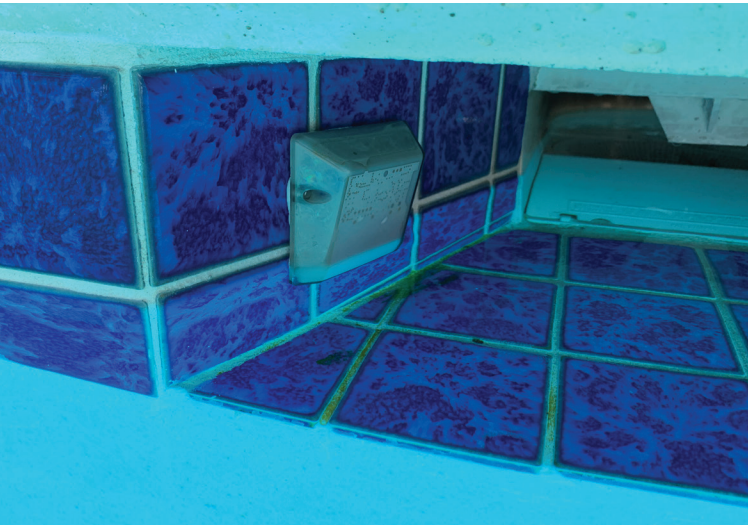


levelsmart™

Wireless Autofill



USER INSTRUCTION MANUAL



Instruction Manual
English



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1 SUPPORTING DOCUMENTS & MEDIA

While the products' installation and setup are covered in the Quick Start Guide, this manual will provide a more detailed description of the product, its installation, setup, and troubleshooting. A complete list of the support media is as follows:

- a. Quick Start Guide: Included in the product packaging box, this document will cover both the installation & setup and will satisfy the needs of most installers.
- b. Product Manual (this document): Provides an expanded description of the product, its installation, setup, and troubleshooting.
- c. Media: The following QR Code will take you to available videos that cover the installation and commissioning of the system.



2 DESCRIPTION

LevelSmart is a sophisticated, yet simple to install, wireless control system designed to maintain the desired water level in Pools, Spas, Water Features, Ponds, or Tanks.

Unlike other level control systems, LevelSmart does not require underground wiring or plumbing from the equipment pad to the body of water.

Innovative and patented sensing methods ensure that LevelSmart provides a reliable and user-friendly auto-filling solution.

The schematic (Fig.1.0) on page 4 of this manual shows a typical LevelSmart installation.

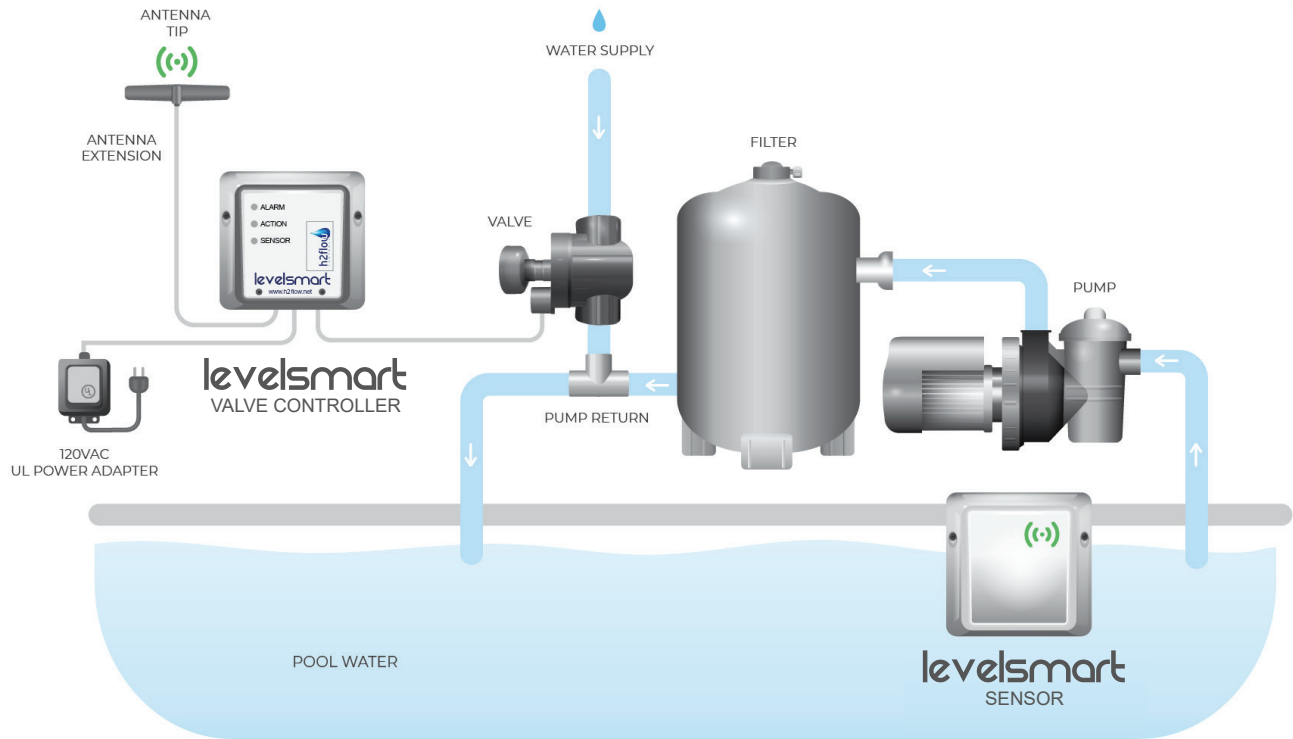


Fig.1.0

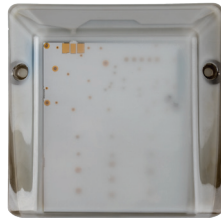
The overall principle of operation of the LevelSmart system is as follows:

During setup, the Level Sensor is taught the desired water level. When the Level Sensor detects a low level, it communicates this condition to the valve controller via a wireless signal. The valve controller opens the water supply valve for 7 minutes to restore the desired level. Every 30 minutes, the valve controller will repeat the process until the desired water level has been achieved. A maximum number of (8) repeat simultaneous cycles will occur, after which an Alarm LED will illuminate on the valve controller. Most low water level conditions will be restored within 1 to 2 cycles.

3 WHAT'S IN THE BOX



LevelSmart valve controller



LevelSmart level sensor



Automatic valve



Antenna



Accessory kit: epoxy,
(x2) wire nuts, (x2)
screws



Power supply



Antenna extension
cable (optional)



Quick Start Guide

4 INSTALLATION AND SETUP

While most aspects of the installation can be undertaken by a person with good DIY skills, the installation of the Valve should only be undertaken by a person that is skilled or proficient in the plumbing of PVC pipe.

The following step-by-step procedures are required for the systems installation:

- a. Install the Valve
- b. Install and connect the Valve Controller
- c. Connect the Antenna
- d. Install the Power Supply and connect to the Valve Controller
- e. Pair the Level Sensor and Valve Controller
- f. Mount the Level Sensor
- g. Mount the Antenna
- h. Set and calibrate the water level

a) Installing the Valve

The valve has 1" Female NPT sockets on each end. The valve also has a directional arrow molded into the top of the sockets, it is essential that the valve is installed so that the arrow points in the direction of water flow from its source to the pool return line. The most common method of installing the valve is via a 'T' that you will plumb into the existing return line to the pool. The preferred location is after the filter and before any chemical injection points. An appropriately sized adapter with a 1" female thread should be glued into the socket of the 'T'. A short 1" NPT nipple should be threaded into the adapter and the downstream side of the valve threaded onto the other end of the nipple.

If you are able to hard plumb the upstream side of the valve into a freshwater supply line, then this is the preferred method. However, you should make sure that a provision is made to drain this line for winterizing your equipment. If hard plumbing is not an option, then you can connect the upstream side of the valve to a garden hose and spigot. Thread into the upstream side of the valve a 1" male NPT to ¾" female NPT adapter. Into this, thread in a ¾" male NPT to ¾" MHT (male hose thread) adapter. Now connect a suitable length garden hose from the valve to a spigot. If the spigot serves another garden hose, install a 'Y' and connect both the LevelSmart hose and the existing garden hose. Make sure that the homeowner is informed that the valve on the 'Y' to the LevelSmart is never turned off. If possible, affix a tag to inform people not to turn it off.

Important Note: Many local jurisdictions require a non-return / backflow preventer when installing fill lines or irrigation systems to city water supplies. It is the installer's responsibility to check into this and to install an appropriate device if necessary.

b) Install and connect the Valve Controller

The valve controller should be mounted on the wall next to the equipment pad and no more than 6 feet from the valve installed in section a) above. Stainless steel screws and plastic wall plugs are provided for your convenience.

The 6-foot-long black wire (with red and black wire tails), coming from the bottom right-hand side of the valve controller should be connected to the two red wires connected to the solenoid of the valve. Note that this is 24 VAC power and therefore not polarity sensitive; the black and red wires coming from the valve controller can be connected to either of the red wires coming from the valve. Wire nuts are provided.

c) Connect the Antenna

Connect the Antenna plug to the socket on the lower left of the valve controller. Do not mount the Antenna at this time, but place it loosely in a location where it can see the pool and where it can be adhered if a successful pairing of the Level Sensor to the Valve Controller is achieved. Keep the Antenna at least 12 inches away from any metal as this will interfere with the wireless communication between the Level Sensor and Valve Controller.

d) Install and connect the Power Supply to the Valve Controller

Identify a 120 VAC power outlet at the equipment pad and mount the power supply to the wall or zip tie it to a suitable structure that will be close enough to connect the Valve Controller's power cable to the 2-pin outlet at the base of the Power Supply.

Connect the Power Supply's outlet 2-pin socket to the Valve Controller's 2-pin plug and tighten the nut to seal the connection from water ingress.

Connect the Power Supply's 120 VAC plug into the outlet.

At this point you should see the three LED's on the front of the Valve Controller flash in a repetitive sequence from the bottom to the top (green, yellow red).

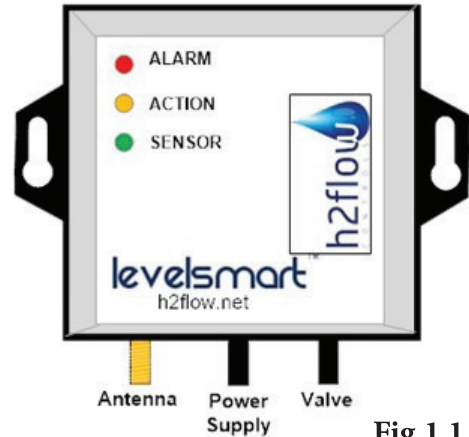


Fig.1.1

e) Pair the Level Sensor and Valve Controller

Take the Level Sensor (Fig.1.2) to the area of the pool that you intend to install it. The throat of a skimmer is a common location. Do not mount the Level Sensor yet. With the Level Sensor close to the installation location, remove the magnet from the front face. You will now see three flashes of the green LED at the top center of the Level Sensor, this indicates that the Level Sensor has initiated its pairing sequence with the Valve Controller.

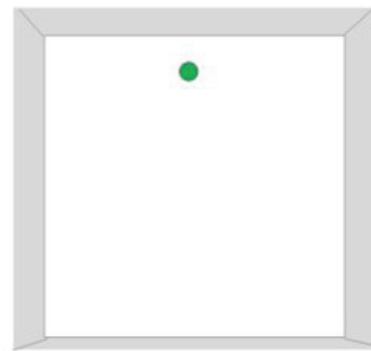


Fig.1.2

Leaving the Level Sensor at the pool side, go back to the Valve Controller (Fig.1.3)

When looking at the Valve Controller, you should see the yellow (Action) LED flash once per second, 30 times. After this, the yellow LED will flash every 4 seconds for a further 2 minutes. Finally, the green (Level Sensor) LED light will illuminate. This solid green Level Sensor LED indicates a successful pairing and that the intended location for the Level Sensor in the pool is a good one.

If a solid green Level Sensor LED does not appear at the end of the 2.5 min, then the Valve Controller will either go back into a pairing mode (the three LED's scrolling from bottom to top), or a solid yellow Action LED will illuminate.

If the unit goes back into either of these conditions, it may be necessary to move the Level Sensor or Antenna to a different location so that they can better see each other. Alternatively, the Antenna's cable may need to be extended using the optional 25-foot cable.

If the system does not go back into pairing mode, simply unplug the power supply for 10 seconds before plugging it back in again.



Fig.1.3

f) Mount the Level Sensor

Once a successful pairing has occurred, we can go ahead and install the Level Sensor. Before doing so, bring the water to the desired level.

It is critical to thoroughly clean / scrub the area where the Level Sensor is to be installed. Now thoroughly dry the area above the water line where the Level Sensor is to be mounted.

Remove the outer plastic skin from the two-part epoxy putty. Knead the epoxy thoroughly until its color is consistent (no white streaks). To protect the face of the Sensor from the epoxy, place the plastic Ziplock bag in the palm of your hand and then place the Level Sensor, face down, on top of the bag. Now evenly spread all of the mixed putty onto the back of the Level Sensor while trying to avoid any coming too close to the edges. Gently place the Level Sensor on the wall of the pool, making sure to a) keep the upper part of the back of the Level Sensor and the side of the pool dry, and b) ensuring the desired water level is somewhere between 0.5 to 1.5 inches up from the bottom of the Level Sensor's face. Press the Level Sensor on as hard as you can and give it a small rotational movement back and forth to achieve a more even spread of the putty. Make sure that the Level Sensor is vertical and then keep pressure on the face for at least 90 seconds. Do not try to pull it off after the 90 seconds as the putty will continue to cure for the next hour or two.

g) Mount the Antenna

Peel the backing tape off the rear of the Antenna. Mount the Antenna close to where it was located during pairing process. Make sure to not mount the Antenna on or within 12 inches of metal.

h) Set and calibrate the water level

This step will teach the LevelSmart system the desired water level that it is to maintain.

With the water at its desired level, place the magnet over the bottom right corner of the Level Sensor for 2-4 seconds before removing it (see Fig.1.4).

A green LED will appear at the top center of the Level Sensor and will flash three times; this indicates that calibration has begun. The Valve Controller's green Sensor LED will also flash for about one-minute as the water level is set.

The calibration process will conclude with a solid green Sensor light on the Valve Controller. The LevelSmart may start a fill cycle for 7 minutes after this stage – this is normal. An indication that the valve is open and water is being added is indicated by the Action LED being illuminated.

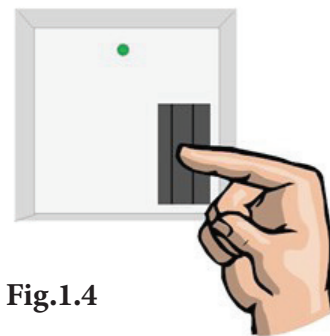


Fig.1.4

5 TESTING THE VALVE AFTER PAIRING

After a successful pairing, the user should ensure that the Valve is connected to the Controller successfully. To check the valve and actuate it for five (5) seconds, follow the steps below.

- a. Hold the magnet to the face of the Valve Controller in the position shown (Fig.1.5) for 2-4 seconds and remove it.
- b. Once the magnet has been removed, the ACTION LED will illuminate for five (5) seconds. When this occurs, the valve will open for five (5) seconds before closing. Confirm that the valve is open by listening for a click from the valve solenoid as soon as the magnet is removed and the ACTION LED illuminates. You may also hear water flowing through the valve. At the end of five (5) seconds, the ACTION LED will go off and the valve will close.

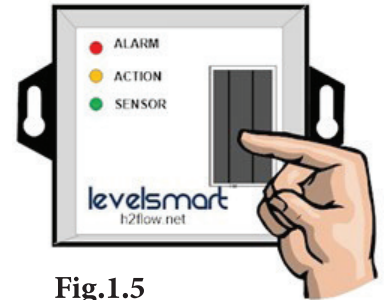


Fig.1.5

Magnet Use Guide

Period of Time	Applied To	Result
2-4 seconds	Sensor	Sets the level
5-15 seconds	Sensor	No action
>15 seconds	Sensor	Resets the unit
2-4 seconds	Valve Controller	Perform a valve test
5-15 seconds	Valve Controller	No action
>15 seconds	Valve Controller	Resets the unit

6 ADJUSTING THE WATER LEVEL

Should it become necessary to adjust the existing calibrated water level, follow this procedure:

- Make sure the Valve Controller is displaying a solid green Sensor LED
- Bring the water level to the new desired level and make sure it is somewhere between 0.5” and 1.5” from the bottom of the Sensor housing.
- Use the magnet to reset the sensor in the pool by holding the magnet on the face of the sensor for 2-4 seconds as shown in Fig1.6.
- When the magnet is removed after 2-4 seconds, ensure three (3) green flashes are seen from the LED in the top center position.
- Observe the Valve Controller’s green Sensor LED flash for approximately one minute as it recalibrates the new water level.
- Ensure that the green Sensor LED turns solid green after the one minute.

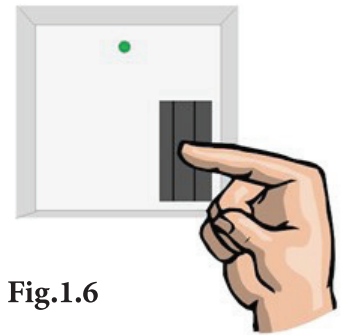


Fig.1.6

7 VALVE FLOW CONTROL ADJUSTMENT

The Valve flow rate can be adjusted to the user's specific application, i.e., for a Pool, the flow control knob shown in Fig.1.7, should be fully open (turned counterclockwise), whereas on a small body of water such as a Spa, it should be at least 50% closed (turning it clockwise to do so). A fully closed flow control knob will result in zero flow.

Other features of the Valve are as follows:

- a. **Solenoid.** This is operated electrically by the LevelSmart Valve Controller. The solenoid can be operated manually by opening it $\frac{1}{4}$ turn counterclockwise to allow flow through the valve. However, the solenoid must always be left in its closed position (fully clockwise), for the LevelSmart to function and to avoid over-filling the pool.
- b. **Flow Control Knob.** For pools, leave all the way open. For smaller bodies of water such as spas or ponds, close half-way down.
- c. **Bleeder Knob.** Do not adjust.
- d. **Arrow.** Make sure water flow is in the direction indicated by the arrow.

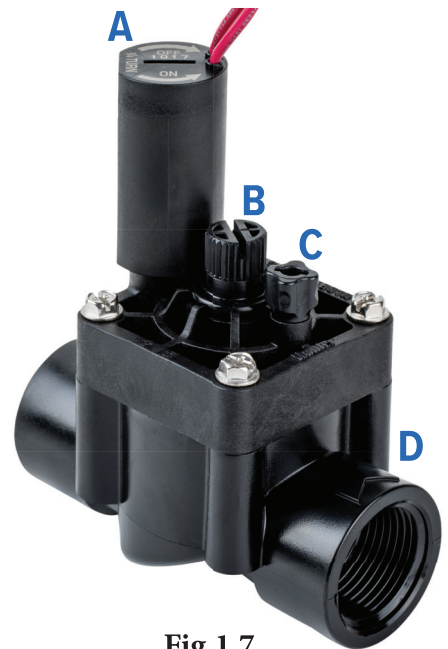


Fig.1.7

8 TROUBLESHOOTING

Condition	Possible Cause	Remedy
Overfilling	Damaged component(s)	Contact H2flow Controls
Overfilling	Improper installation	Attempt pairing process of sensor and valve controller
Overfilling	Valve solenoid is not in the OFF position	Ensure the valve solenoid is in the fully closed / OFF position
Overfilling	Sensor removed from pool.	If the sensor is in a dry location, it will believe water is needed in the pool and the valve will open at every opportunity. Re-apply the sensor in the desired location on the side of the pool. Alternatively, disconnect the valve controller power supply and reconnect when you are ready to pair the unit again.
Overfilling	Sensor mounted with screws	The sensor should only be mounted with epoxy provided in the LevelSmart kit. Check that the level sensor is not cracked. If needed, contact H2flow Controls for further assistance.
Overfilling	Use of out of spec valve (DC, Voltage, etc.)	Use only the components supplied with the LevelSmart unit. If needed, replacement parts can be purchased from H2flow Controls.
Damaged Valve	Improper installation, over tightening, freezing, etc.	Refer to the Instruction Manual, Quick Start Guide and Online Tutorials for guidance on proper installation and maintenance of LevelSmart. If needed, replacement parts can be purchased from H2flow Controls.
Damage	Freeze damage from improper winterization	In colder climate areas, a flexible garden hose is the recommended water supply, rather than PVC pipe. This allows for easy drainage/ winterization.
Water level draining down fast	Vacuum Breaking check valve installed instead of regular check valve in water supply line and hose spigot turned off. Pump's water pressure causes valve to vent and discharge pool water.	Replace Vacuum Breaking check valve with regular check valve. Instruct people to not turn water spigot off.

Condition	Possible Cause	Remedy
Water level not being maintained	Water supply to valve turned off	Restore water supply
Water level not being maintained	Sensor fallen off and permanently submerged	Re-bond sensor to pool wall
Water level not being maintained	Valve or Valve Controller not operating	Activate valve using magnet (see Section 5). Confirm Action LED illuminates. If so check for water flowing through valve. If not, use a voltmeter check for 24 VAC at wire nuts going to valve. If 24 VAC present, valve solenoid is defective. Contact H2flow. If 24 VAC not present when Action LED illuminated, then Valve Controller is defective.
Water level not set to correct level	Water level calibration requires adjustment	See Section 6

9 NOTES

LIMITED WARRANTY FOR LEVELSMART AUTOFILL PRODUCTS

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (H2flow Controls, Inc., Sylvania, Ohio); provided, however, that this warranty applies only to components of LevelSmart products found to be so defective within a period of 12 months from the date of manufacture by the Seller.

Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where the product has been disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF SELLER'S LIABILITY

SELLER'S LIABILITY TO BUYER FOR ANY LOSS OR CLAIM, INCLUDING LIABILITY INCURRED IN CONNECTION WITH (I) BREACH OF ANY WARRANTY WHATSOEVER, EXPRESSED OR IMPLIED, (II) A BREACH OF CONTRACT, (III) A NEGLIGENT ACT OR ACTS (OR NEGLIGENT FAILURE TO ACT) COMMITTED BY SELLER, OR (IV) AN ACT FOR WHICH STRICT LIABILITY WILL BE INPUTTED TO SELLER, IS LIMITED TO THE "LIMITED WARRANTY" OF REPAIR AND/OR REPLACEMENT AS SO STATED IN OUR WARRANTY OF PRODUCT. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OF A LIKE GENERAL NATURE, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS OR PRODUCTION, OR LOSS OR EXPENSES OF ANY NATURE INCURRED BY THE BUYER OR ANY THIRD PARTY.

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