

MCU-21 EasyFill ULTRA™ Sensing Control Unit User Manual

Thank you for purchasing the *Level Waters*™ MCU-21 **EasyFill ULTRA™** Electronic Control/Sensor. It is the smallest automatic, completely electronic water level sensing unit on the market. The MCU-21 is supplied with our complete systems, the MSU-3424 that includes a power unit and 3/4" valve or the MSU-1024 with a 1" valve and power unit.

The MCU-21 incorporates a dependable patented sensing process in a economical design and provides professional filling functions without large controllers. It may be used in many applications including ponds, water gardens, fountains and other water features.

The Unit uses no external moving parts and will not clog like standard float valves can. It is the only professional grade auto-fill that combines the control circuitry within the sensor housing. It includes an approximate 7-20 sec. wave compensation delay and a failsafe probe to ensure against overflow.

The MCU-21 provides dependable filling in a simple design to achieve an optimum water level. Installation is a snap with simple plumbing and wiring.

For more information on our full line of professional leveling systems, visit us on the web at www.AquilitySystems.com.



Safety Overview

The **EasyFill ULTRA™** Water Level Control/Sensor is designed to provide the user a safe product that is easy to install and use. When installed as described in this manual, the system presents no unsafe shock hazards. However, altering any of the components may present an unsafe circumstance.

Some other considerations to keep in mind during installation and operations are as follows:

Always use a Class 2 power limiting supply.

Never mount a power supply made for indoor use in an outdoors environment where it will get wet. **Follow all manufacturer instructions when installing a power supply.**

Do not insert metal objects into sensor probes while unit is turned on.

Do not break seals on unit. Doing so may expose the user to potentially dangerous voltages when unit is turned on and will void the warranty.

Do not plug the power supply in until all wiring is complete and leads are not exposed!

Always use safety equipment, such as eye protection, and dust mask when cutting PVC piping along with other normal safety precautions.

Always carefully follow all installation instructions.

Installation

The MCU-21 Control/Sensor is simple to install. A 24VAC Class 2 unbalanced power unit with sufficient power handling capability to power the supply valve (typically 350-500ma) and a 24VAC irrigation valve will be needed for installation. These may be purchased from many local hardware stores. **Note:** It is important not to use a power source that is referenced to ground on one phase (balanced) and that the water is not at ground potential. **This will cause the unit to not operate properly.**

Installation will also require simple PVC pipe installation and mounting the sensing control unit along with simple wiring. The limited plumbing that is necessary to provide the system with filling water, requires only a hacksaw (or other appropriate saw), PVC cement and sufficient PVC and adapters.

Preparing for Installation

Open the package and ensure that all of the components are present and have not been damaged in shipping. Items included in the system are:

- MCU-21 **EasyFill ULTRA™** Control/Sensor
- Mounting Accessory Kit
- Wire brush for probe cleaning
- MCU-21 User Manual

Identify where the **EasyFill ULTRA™** will be mounted. The fill valve should be mounted within 75 feet of the control wires on the MCU-21 using irrigation zone wire. An outside water

feed, such as a spigot will need to be run to the valve and then to the water feature that will be filled.

A **weather-protected** receptacle for power will need to be located within a maximum of 12 feet of the **EasyFill ULTRA™** Control/Sensor to install the power module. If more power cord is needed, an extension cord may be installed (sold separately) up to a length of 6 feet, which will give an overall distance to the outlet of 18 feet. **Do NOT extend beyond this or the warranty will be void.**

Warning! Always consult with an electrician when installing electrical wiring! Not doing so could result in a dangerous condition and/or noncompliance with electrical codes.

Installing the Control/Sensor

Determine a location where the **EasyFill ULTRA™** control/sensor will be mounted (try to find an inconspicuous place.). If the unit is to be mounted in a skimmer, locate the surface it will mount on and verify that the sensor window will maintain the level at the optimum height for the skimmer.



Position the **EasyFill X™** Control/Sensor with the

probes 1/8" below the desired water level. Use the supplied #6 screws to mount it securely in place. To make cleaning the probes easy, install a MNT-SN Snap Mount (sold separately) so the control sensor can be easily removed and remounted. If the sensor height will need to be adjusted, MNT-EZ/SLU adjustable mount (sold separately) may be installed. This will not be needed for most installations.

The short fail-safe probe between the sensing probes should be positioned well below the top edge of the water feature so that overflows do not happen

Installing the Valve

Plumb the input and output of the valve (follow manufacturer's instructions for valve) to an always-on water source using PVC pipe or garden hose (see 'Plumbing the Unit' for PVC installation tips). We recommend installing a ball valve on the output of the valve to control flow volume to the water feature.

Warning! The fill valve must be installed in an upright position with the wires extending upwards from the unit to function correctly.

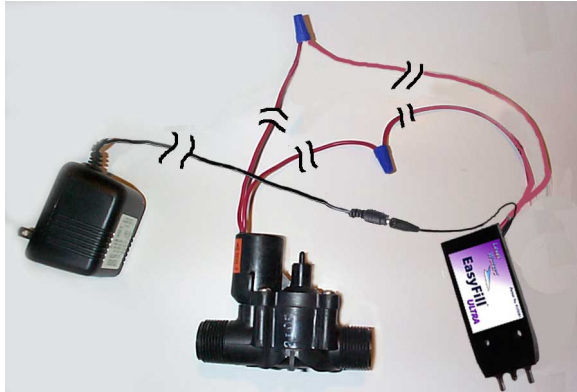
Wiring the System

Wiring the **EasyFill ULTRA™** Control/Sensor to the power supply and fill valve requires that each connection be sealed from water using self-adhering tape and electrical sealant.

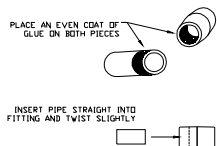
Warning! Do not plug the power supply in until all wiring is complete and leads are not exposed! Doing so will could cause damage to the power unit and void the warranty!

Remove precut insulation from sensor and power supply wire ends. Connect wires as shown in Diagram 2 using wire nuts provided. Bend wire nut connection flat to length of wire and wrap with self-adhering tape making sure to create a proper watertight seal. Apply a liquid electrical sealant (available at most hardware stores) to each connection. We recommend that the unit be tested before weatherproofing the connectors.

Note: It does not matter which red wire from the valve are used when wiring.



Connection	Power Lead	Sensor Lead	Valve Lead
1	1 Black	1 Black	---
2	---	1st Red	1st Red
3	---	2nd Red	2nd Red



Plumbing the Unit

Using PVC pipe sized for the valve being used (available at most hardware stores), run water supply from the fill valve outlet to the pond routing it the way desired.

Parts needed:

- Hacksaw (or other suitable fine-toothed saw)
- PVC glue
- Required lengths of appropriate sized PVC
- Required angle adapters.

Cut and fit all PVC pipe from the fill valve to the water feature without gluing to make sure that the pipes are where the user desires them.

Clean and glue all parts with general PVC cement to form a watertight seal. Allow joints to dry for 24 hours before connecting water to the system.

Plug the power supply into the weather-protected receptacle. The unit is ready for operation

Operation

Once the **EasyFill ULTRA™** is connected properly and plugged in it will fill anytime the water level drops below the sensor probe window after an approximate 7 - 10 second delay.

Note! If the level of the water at the time of power up is low, the unit will fill until the water level reaches the probes before turning off.

Maintenance

The **EasyFill ULTRA™** requires very little maintenance. Periodically clean the sensor probes thoroughly with the supplied wire brush or equivalent to remove debris and film. No other maintenance is required.

Troubleshooting

The MCU-21 **EasyFill ULTRA™** Automatic Pond Leveling Control/Sensor should maintain the level in your pond for many worry-free years. However, if you should experience problems with it, it may be caused by some of these common issues that can be resolved by the user:

- ✗ Pond overflows when filling
- ✓ Verify valve is installed upright, flow direction is correct and manual fill screw is tight.

- ✓ Verify proper connections with the sensor control.
- ✓ Water may be at ground or voltage potential. Measure with meter and remove grounding source or check submerged equipment for shorts.
- ✗ Pond will not fill
- ✓ Check to make sure power is available at receptacle.
- ✓ Check for debris on sensor probes and clean per instructions.
- ✓ Check to ensure connections are not damaged and are covered with weatherproof tape or sealant. Allow connections to dry if necessary and seal per the instructions.

Warranty

Aquility Systems, Inc warrants this product to the original purchaser for a period of two years against defects in material or workmanship when used for normal purposes it is intended for. In order to obtain a replacement unit or repair the existing unit, you must obtain a RMA number and return the complete unit, postage prepaid, to the Aquility Systems facility. (6949 SW 21st Lane, Gainesville, FL 32607)

This warranty is intended to cover product defects only. Aquility Systems, Inc. is not liable for indirect, incidental or consequential damages in connection with the use of the Level Waters product covered by this warranty. This warranty does not cover any cost or expense incurred by the purchaser in providing substitute equipment or service during reasonable periods of malfunction or non-use of this product, while waiting for completion of repairs under this warranty. Some states do not allow exclusions of incidental or consequential damages, so the above exclusions may not apply in all states. This warranty gives you specific legal rights in your state, which vary from state to state.

If you wish to contact Aquility Systems, Inc., please direct inquiries to:
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