

Measured Irrigation Valve Controller User Manual



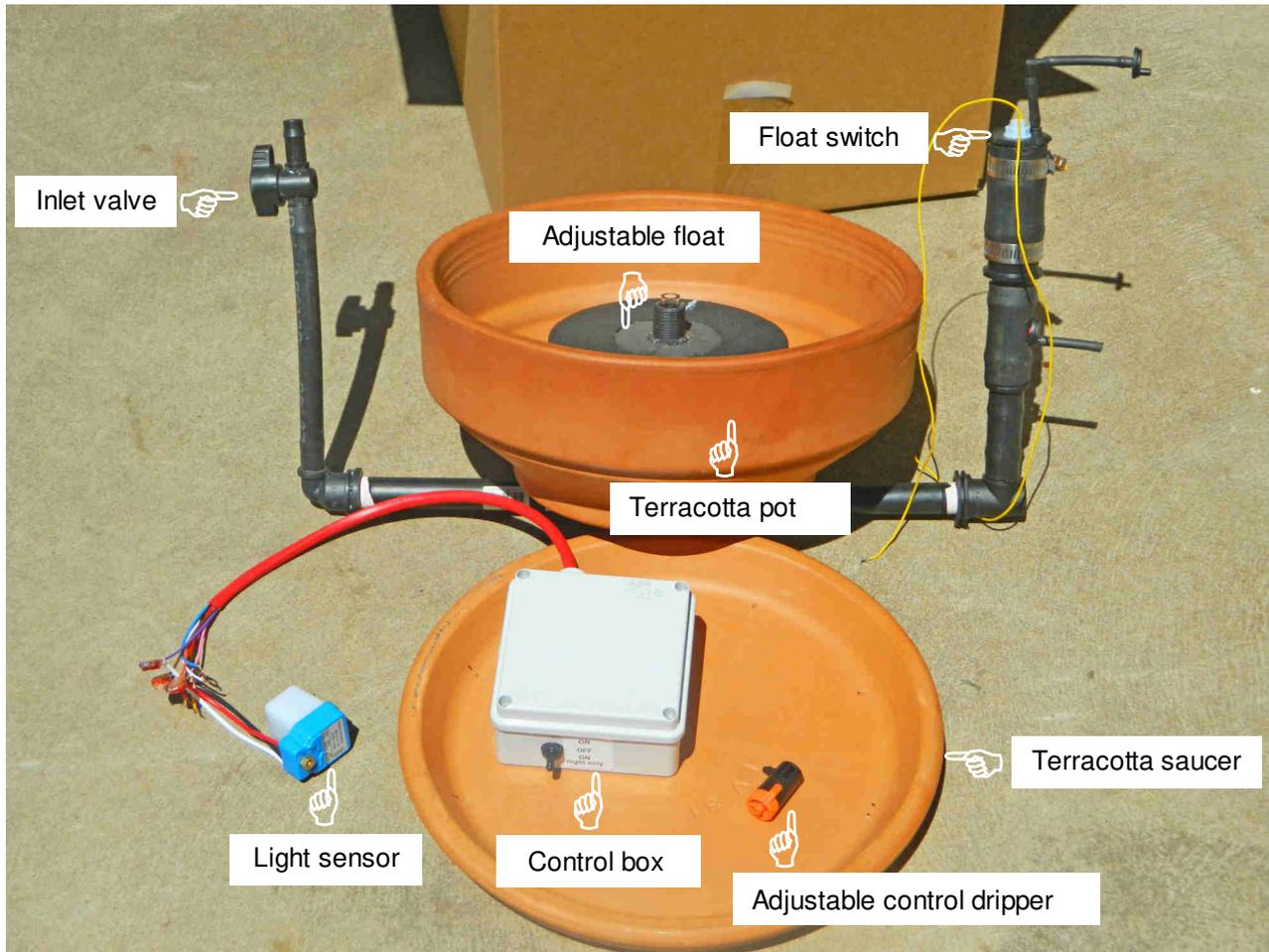
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1. Introduction



The irrigation starts automatically after sufficient water has evaporated from the outside of the porous terracotta pot. The irrigation stops automatically when the control dripper has replaced the evaporated water. The adjustable control dripper is used to adjust the water usage to suit the water requirements of the plants. The adjustable float is used to adjust the frequency of irrigation.

Having set the adjustable control dripper and the adjustable float, the irrigation frequency and the water usage (litres per week for example) are controlled by the prevailing on site evaporation and rainfall. The irrigation frequency and water usage are proportional to the net evaporation rate (evaporation minus rainfall).

2. Key features of the Measured Irrigation Valve Controller

1. Use for any size irrigation application with any size solenoid valve
2. The water in the terracotta pot is protected from algae, mosquitoes and other pests
3. Completely automatic
4. Smart irrigation – the irrigation is controlled by the prevailing weather conditions
5. Use for both gravity feed and pressurised irrigation
6. Use for both sprinkler and drip irrigation
7. Use for both pressure compensating drippers and non pressure compensating drippers.
8. Use for porous hose irrigation (for example, weeper hose or soaker hose)
9. You can adjust the water usage (litres per week for example) by adjusting the flow rate of the control dripper
10. You can adjust the irrigation frequency by adjusting the float to change the volume of water discharged by the control dripper during the irrigation event (between 360 ml and 2500 ml)
11. Adjusting the water usage does not affect the irrigation frequency, and adjusting the irrigation frequency does not affect the water usage
12. The water usage and irrigation frequency are directly proportional to the net evaporation rate (evaporation minus rainfall)
13. When there is an unexpected heat wave, the irrigation frequency increases
14. When it rains, water enters the terracotta pot and delays the start of the next irrigation
15. A timer is not required
16. If you are using the same drippers throughout the irrigation application including the control dripper, the water usage is independent of the pressure (the pressure can be as low as 5 kPa)
17. The water usage is independent of the pressure provided that all drippers have the same emitter discharge exponent (see Section 5)
18. You can irrigate directly from a rainwater tank without using a pump
19. A light sensor provides the option of irrigating at night time only
20. Uses much less water without affecting the yield
21. Simple and low tech, therefore fewer things can go wrong
22. Provided you have a continuous water supply, you can leave your irrigation application unattended for weeks on end



Adjustable control dripper

3. Installing the Measured Irrigation Valve Controller

Step 1. Position the Measured Irrigation Valve Controller in a suitable location in your garden so that the evaporation at the valve controller matches the evaporation at your plants. Use 2 house bricks (for example) to support the terracotta pot.

Step 2. Connect a water supply to the green inlet valve on the valve controller and open the valve. The water pressure at the green inlet valve should be between 10 kPa and 300 kPa during the irrigation event.



Step 3. Connect the adjustable control dripper to the irrigation zone so that it drips water into the terracotta saucer during the irrigation event.



Step 4. The control box has 7 colour-coded wires which need to be connected to the various components as follows:

Connect the **red** wire to the positive terminal of a 12V DC power supply.

Connect the **yellow** wire to one of the yellow wires from the float switch.

Connect the **white** wire to the other yellow wire from the float switch.



12V DC solenoid valve

Connect the **blue** wire to one of the wires from the solenoid valve.

Connect the **green** wire to the other wire from the solenoid valve.

Connect the **black** wire to the **brown** wire and to the negative terminal of the 12V DC power supply.



Solenoid valve with a different power supply

Connect the **green** wire to one of the wires from the solenoid valve.

Connect the **black** wire to the negative terminal of the 12V DC power supply.

Connect the **brown** wire to one of the wires from the different power supply.

Connect the other wire from the solenoid valve to the other wire from the different power supply.



4. Using the Measured Irrigation Valve Controller

The switch on the control box had 3 positions: **ON** (switch up), **OFF** (middle position), and **ON night only** (switch down).

When the switch on the control box is in the **ON** position, the irrigation starts automatically after sufficient water has evaporated from the outside of the porous terracotta pot. The irrigation stops automatically when the control dripper has replaced the evaporated water.

When the switch on the control box is in the **ON night only** position, the irrigation happens at night time only.

Provided the switch is in the ON position, you can start the irrigation manually by pressing the float down. For example, on a very hot day you may wish to irrigate in the middle of the day.

How to adjust the water usage:

If you are using drippers, position an empty measuring container under one of the drippers so that water drips into the container during the irrigation event. At the end of the irrigation event check the amount of water in the measuring container. You should also check the moisture in the soil.

If your plants are not getting enough water, turn the control dripper clockwise to reduce the flow rate of the control dripper. Reducing the flow rate of the control dripper increases the duration of the irrigation event and so your plants get more water.

If your plants are getting too much water, turn the control dripper anticlockwise to increase the flow rate of the control dripper.

How to adjust the irrigation frequency:

You can adjust the irrigation frequency by adjusting the gap between the upper and lower discs on the float. Note that the irrigation frequency is controlled by the net evaporation from the outside surface of the terracotta pot between irrigation events. To adjust the gap by 4 mm simply rotate the upper disc by two and a quarter turns



Switch in the **ON night time** position



Position an empty measuring container under one of the drippers



To adjust the irrigation frequency, adjust the gap between the upper and lower discs

Gap between the upper and lower discs	Net evaporation between irrigation events
zero gap	400 ml
4 mm	637 ml
8 mm	874 ml
12 mm	1111 ml
16 mm	1348 ml
20 mm	1585 ml
24 mm	1822 ml
28 mm	2059 ml
32 mm	2296 ml
36 mm	2533 ml

5. When is water usage independent of pressure?

If the same dripper is used for the control dripper and all the irrigation drippers, the volume of water discharged by each dripper during the irrigation event is approximately the same. Furthermore, the volume of water discharged by each dripper during the irrigation event is **independent of the pressure**. This is also true if different drippers are used provided that all drippers have the same emitter discharge exponent (contact the dripper manufacturer for details).

This means that you can irrigate directly from a rainwater tank without using a pump or a timer. The water usage (litres per week for example) is controlled by the prevailing weather conditions and is independent of the water level in the tank. The water level can rise and fall dramatically without affecting the volume of water used during the irrigation event. The Measured Irrigation Valve Controller is a game-changer for automated irrigation from a rainwater tank without using a pump or timer.