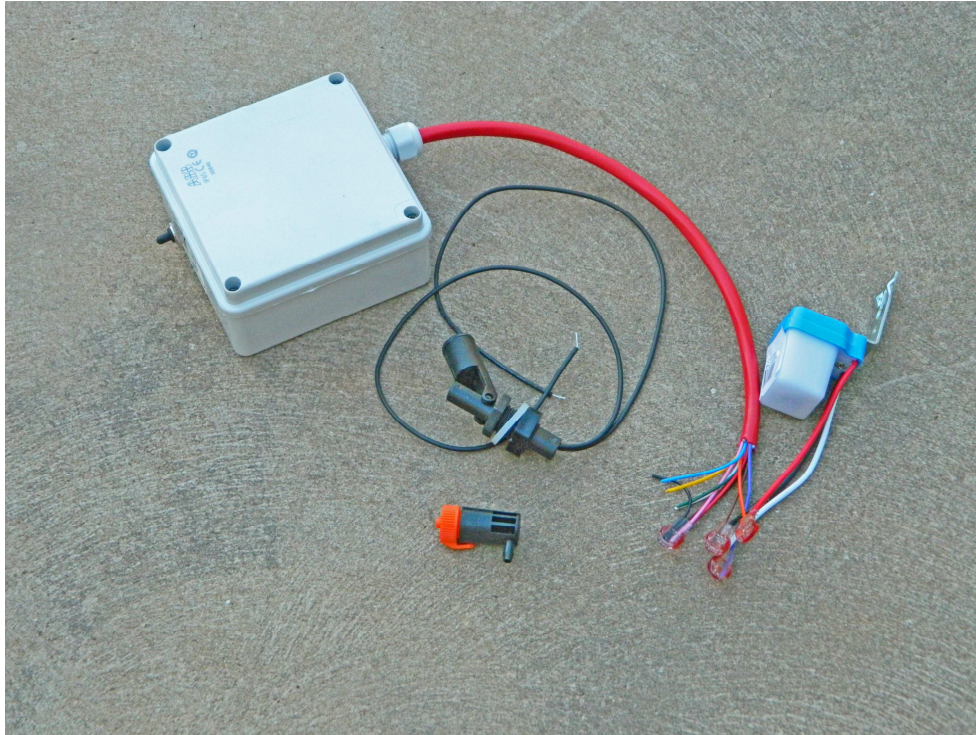# DIY Sunset Measured Irrigation Controller Kit User Manual
more crop per drop

DIY Sunset Measured Irrigation Controller Kit

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1.   Introduction to the DIY Sunset Measured Irrigation ControllerKit

Measured irrigation is an irrigation scheduling method that satisfies the following two conditions:

1. *Variations in the water usage throughout the year are controlled by the prevailing net evaporation rate (evaporation minus rainfall).*

2. *The volume of water discharged by each emitter during an irrigation event is controlled directly without the need to control the flow rate or the duration of the irrigation event.*

It is assumed that the drip irrigation system (either pressurised or gravity feed) for your garden or small plot of land has already been established.

The DIY Sunset Measured Irrigation Controller Kit can be used for gravity feed or pressurised irrigation, for drip or sprinkler irrigation, for pressure compensating drippers (PC) or non pressure compensating drippers (NPC).

The water usage for the DIY Sunset Measured Irrigation Controller Kit is directly proportional to the net evaporation rate experience by you plants. This is a unique feature of measured irrigation. The irrigation starts at sunset each day provided that the water level in the evaporator is below the float switch

The DIY Sunset Measured Irrigation Controller Kit can be purchased online from the Measured Irrigation website: https://www.measuredirrigation.com/product-page/diy-Sunset-measured-irrigation-kit

2.   Instructions for assembling the DIY Sunset Measured Irrigation Controller Kit

The kit does not include an evaporator. The components in the kit are as follows:

- Irrigation control box with light sensor
- Float switch
- Adjustable control dripper
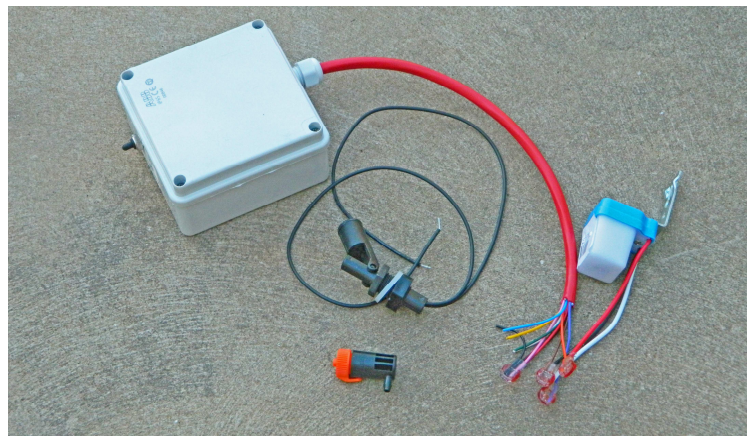
Components in the DIY Sunset MI Controller Kit

Step 1. Choose a suitable evaporator. The evaporator is a plastic container with vertical sides with an opening of at least 20cm x 20cm and a height of at least 15cm (a hobby box is ideal).

A hobby box makes an ideal evaporator

Step 2. Drill a 16mm hole in the side of the evaporator. The centre of the hole should be about 3cm lower than the overflow level for the evaporator.

Step 3. Use the hole to install the float switch so that the float swings up. Connect the wires from the float switch to the **white** and **yellow** wires from the control box.

Install the float switch

Step 4. Connect a 12V DC power supply to the **red** wire (positive) and the **black** wire (negative) from the control box.

Step 5. Connect a 12V DC solenoid valve to your water supply. Connect the **blue** wire from the control box to one of the wires from the solenoid valve. Connect the **green** wire from the control box to the other wire from the solenoid wire.

Changes required for an alternative solenoid valve with an alternative power supply:

Disconnect the **blue** wire from the 12V DC solenoid valve.

Disconnect the **green** wire from the 12V DC solenoid valve and connect it to one of the wires from alternative solenoid valve.

Connect the other wire from alternative solenoid valve to one of the wires from the alternative power supply.

Cut the **pink** wire (connected to the **black** wire) and reconnect it to the other wire from the alternative power supply.

Step 6. The switch on the control box had 3 positions: **ON** (switch up), **OFF** (middle position), and **ON night only** (switch down). If you are happy for the irrigation to occur at any time of day, then flick the switch up. If you want the irrigation to occur at night time only, then flick the switch down.

Switch with 3 positions: ON, OFF, ON night only

Step 7. Connect the adjustable control dripper to the irrigation system so that it drips water into the evaporator during the irrigation. (If your irrigation system uses pressure compensating drippers, use a pressure compensating dripper instead of the adjustable control dripper provided.)

Position the adjustable control dripper so that it drips water into the evaporator

Step 8. Fill the evaporator with water to the level of the float switch.

Step 9 The water level falls as water slowly evaporates from the evaporator. When the water level has fallen below the float switch, the irrigation starts automatically provided that the switch on the control box is in the ON position. If the switch on the control box is in the ON night only position, the irrigation starts at sunset provided that the water level is below the float switch. The water level rises as the control dripper drips water into the evaporator. When the water level covers the float switch the irrigation stops automatically. The cycle continues indefinitely.

Fill the evaporator

Step 10. You may wish to protect the evaporator to prevent animals drinking the water, but make sure that you do not impede the evaporation (chicken wire is ideal). Replace the water and clean the evaporator regularly to remove algae and other contaminants.
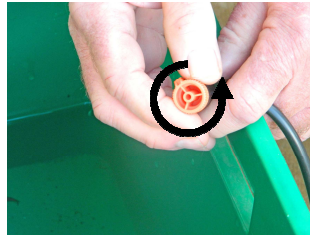
3.   How to adjust the water usage for sprinklers and non pressure compensating drippers

If your plants are not getting enough water, turn the control dripper clockwise to reduce the flow rate of the control dripper.

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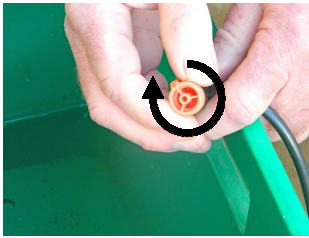
Turn the control dripper clockwise to reduce the flow rate

Turn the control dripper anticlockwise to increase the flow rate

4.   How to adjust the water usage for pressure compensating drippers

The water usage is directly proportional to the surface area of evaporation. You can increase the surface area of evaporation by choosing a supplementary evaporator with vertical sides. The total surface area of evaporation is 3he surface area of the supplementary evaporator plus the surface area of the original evaporator minus the surface area of the float. One way to connect the evaporators is to drill in hole in the side of each evaporator and to insert a rubber grommet into each hole. Insert a barbed connector or elbow into each grommet, and then use a length of flexible tube to connect the evaporators. The water level will be same in both evaporators.

You can decrease the surface area of evaporation by placing full bottles of water in the evaporator.

Connecting two evaporators

5. Key features of the DIY Unpowered Measured Irrigation Controller Kit

1. Completely automatic
2. Smart irrigation controller – the irrigation is controlled by the prevailing weather conditions rather than a program
3. Use for gravity feed or pressurised irrigation (water supply pressure at least 10 kPa)
4. Use for sprinkler or drip irrigation
5. Use for pressure compensating drippers or non pressure compensating drippers
6. You can adjust the water usage by adjusting the control dripper
7. The water usage is directly proportional to the net evaporation rate
   (this is a unique feature of measured irrigation)
8. The irrigation starts at sunset each day provided that the water level is below the float switch
9. Responds appropriately to an unexpected heat wave
10. When it rains, water enters the evaporator and delays the start of the next irrigation
11. The water usage is independent of the water supply pressure
    (this is a unique feature of measured irrigation)
12. Uses much less water without affecting the yield
13. Simple and low tech and so easy to assemble and fewer things to go wrong
14. Provided you have a continuous water supply, you can leave your irrigation application unattended for weeks on end