

Choosing an irrigation Controller

A brief overview...

A good irrigation system will pay dividends for many years providing pleasure as well as adding property value with a flourishing garden and lawns. Installing the “best” system for your property requires careful thinking about the landscape needs, desired functionality and design for both now and in the future. Virtually every user will expand/change their system over time. The controller is the heart of the system and the most important. A poor choice will lead to much frustration and a sub-optimal irrigation system.

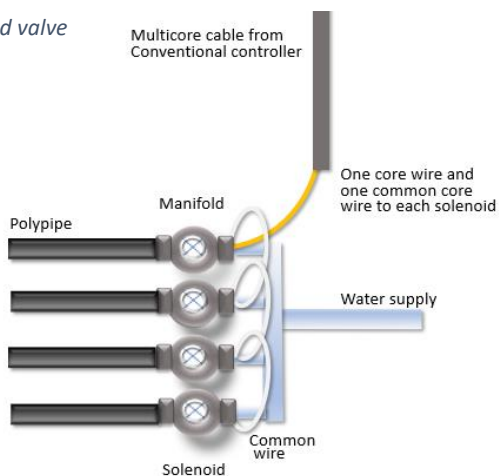
Irrigation solenoid valves and “zones”

Irrigation controllers use a low safe voltage over wires connected to irrigation solenoid valves. The valves (called “irrigation valves” or “irrigation solenoid valves” or “irrigation solenoids”) simply turn on/off the water supply to sprinklers, drippers and misters to an area (e.g. lawn, hedges, etc called a “zone”). They can be purchased at hardware outlets and irrigation suppliers. The total number of zones (areas to be watered) that you need is especially important. It is also important to ensure that the right amount of water is given to the different plant types and that all areas of the landscape are adequately covered. Most users dramatically underestimate their required number of zones. Unfortunately, expansion with most controllers can require extensive labour and very often need an additional and/or new controller.



Solenoid valve

Valves are connected using the 2 wires attached to the valve. For example, if an installation has 4 irrigation valves, there will be 5 separate wires (one different coloured wire to each valve and one “common” wire to every valve).



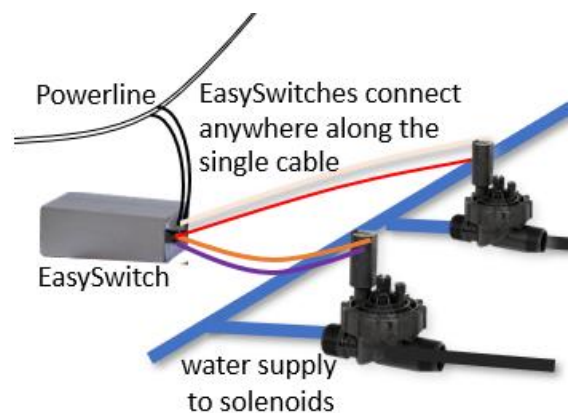
Solenoid valves are often connected using fragile thin individual wires wrapped in a multicore-wire “irrigation cable” that must be laid all the way back to where the controller is physically located. Since irrigation cable comes in a fixed number of these thin coloured wires within the cable, once this number is used for connections then no more valves can be added unless

more cable is laid all the way back to the controller; most often necessitating considerable re-digging!

Some more recent simple systems use WIFI to a small controller (incorporating a battery) in the garden that can then turn on a tap. The issue here is the limited range of WIFI and the cost and inflexibility making this approach mostly suitable for small situations. **More advanced systems use “powerline” technology** so that a single more robust cable can be used for all the valves. These advanced systems have devices (often called “decoders”) attached to the single cable. The decoders then attach to the valves.



Single 2-core wire powerline cable can be laid in any directions and the decoders (“EasySwitches” in the Easy Irrigation system) can be connected anywhere along the powerline cable.



A significant advantage of single cable systems is that there is no need for re-digging and laying additional cable (or water supply piping) when a new solenoid valve is added. Garden layout is much simpler allowing for cheaper and easier expansion for more watering zones, lighting, fountains, water tank pumps, pool pumps, etc.

Powerline systems are used in many applications including in modern cars and trucks. They initially appear more expensive but are much more flexible and powerful. They provide considerable savings in expansion, flexibility and power thereby negating the initial cost. The larger the installation the more appropriate and more cost effective they become.

Controllers

Almost all controllers switch only irrigation valves and most controllers are severely limited in the total number of valves that can be attached. Furthermore, most controller can only turn on one zone at a time which is a considerable disadvantage for sites where there is ample water supply. A controller’s capability is first determined by how many valves/zones (sometimes called “stations”) that it can handle. Typically, the number of zones is limited to 8, 16, 32 or more for expensive irrigation controllers. It is frustrating and expensive to run out of zones because either a second or new controller will need to be purchased. Additionally, new cabling will often be required with extra labour to relay the new cable. It is surprising how many zones are needed as gardens mature

and change- new plantings, new lawns, etc. and for commercial growers new crops and new plots.

If it is desired to also control other devices such as lighting, a pump for rain water use from a tank or dam, fountains, pool pumps, spotlights, etc, then almost all conventional irrigation controllers are incapable of achieving these features.

These limits do not apply to the Easy Irrigation Landscape Control System (EI-LCS). - it can evolve almost endlessly as your needs grow!

Screens, remote control, multiple users

Most controllers can only be operated on site by one user at a time and often have confusing limited functionality implemented by knobs, dials and push buttons. Zones are simply numbered 1,2,3 etc and the user must know that zone 2, for example, is the lawn. More recent controllers have some screen-based control functions allowing the user to enter text names for the zones. Some are WIFI (very limited in range) and/or web enabled but most are still very limited in the number of zones and their control features. Many of these “new” controllers are old technology controllers modified to enable smartphones to control them. Screen control is rapidly replacing the clumsy “knobs and dials” of yesteryear and is simpler for all users. However, most of these newer systems require access to special control software on the web or a smartphone. If internet access is not available or the “app” is not on the smartphone, then the controllers are reduced in capability or simply unworkable!

The Easy Irrigation Landscape Control system (EI-LCS) does not need a special control app on mobile devices nor connection to the internet. It can operate fully standalone or in multiuser remote using smartphones.

Control capabilities

Simple controllers (typically from hardware outlets) only provide sequential control of irrigation zones (turning on one zone after the other using the same duration for every zone!). Better controllers permit totally independent control of all zones with user specified durations (normally to the minute or second). Flexible and precise durations (to the second) can save a considerable amount of water over time and ensure over and under watering is minimised.



The Easy Irrigation Control system allows users to specify durations **to the second** which is not only useful for precise plant care but conserves water. Advanced features (especially useful for landscapers and property managers) include **multi-site multi-user remote control**. Sites often need control of water tanks or dam pumps and diverter valves. Conserving water and providing efficient irrigation is further enhanced with “**wet and wait**” cycling offered by the Easy Irrigation system and some other advanced controllers whereby a duration of watering consists of short periods of watering followed by a wait period to enable water to penetrate to the root zone and **minimize runoff**. This is also useful for **misting of plants in greenhouses and ferneries**.

Scheduling

Nearly all controllers are very limited in the number of “starts” per day and in total. This impacts users who need to schedule more than a few zones and is especially important in hot summers and for bonsai, mushroom farmers, veggies, delicate seedlings/plants, etc. where several waterings are needed during a hot day. Some plants don’t like being watered before or after sunset (to minimise the risk of fungal infections)- important for lawns, grape and rose growers. **The Easy Irrigation system can schedule using sun events (sunrise, solar noon and sunset). The Easy Irrigation system is practically unlimited in the number of starts per day and in total and starts can be scheduled to occur relative to sun events.** For example, water the roses one hour after sunrise. Of course, sun event scheduling is also excellent for lighting control. For example, turn on the driveway lights 30 minutes before sunset. The system will automatically adjust the start time for every day of the year based on the exact local sun times.

Not just watering - Landscape control

With screen control and remote-control capabilities users (both domestic and commercial) are now wanting and expecting superior control features.

The Easy Irrigation controller can be used for a small simple irrigation system of just a few zones or expanded to a comprehensive landscape control system directly controlling standard 12-volt LED garden lighting, many

irrigation valves, multiple pumps and diverter valves, swimming pool pumps, misters, fans, heaters and other mains devices.

Other advanced features

An installation with many zones is much more efficiently operated if multiple zones can be handled as one entity. For example, a large lawn typically will need to be watered by multiple zones since water pressure/supply is always limited so that the sprinklers can physically cover only a certain area at the one time. Watering a large lawn therefore requires turning on all the comprising zones one after the other – a somewhat clumsy procedure to do manually or to schedule in almost all systems.

The Easy Irrigation Landscape Control system facilitates a “Series” whereby the user can set up multiple zones to be controlled as if they were one zone. When the series turns on, the system automatically turns on the comprising zones one after the other (with a user configurable overlap to minimize water hammer necessary to reduce piping damage).

The Easy Irrigation system can also define a “Group” whereby zones are turned on at the same time- excellent for lighting (e.g. turn on the driveway lights) or where water supply permits watering several zones simultaneously.

As controllers become more advanced in their technology users can perform more control functions and more complex control operations with the relative ease that is afforded by user friendly screens.

Some useful features provided by the Easy Irrigation system are: -

- Viewing which zones are scheduled and when
- Real time display of the remaining times of Ons
- Viewing the last time on and duration for every zone
- Viewing schedules for any/all zones for any day
- Simply omitting a start from a schedule for one or more days without affecting the whole schedule
- Increasing/decreasing the duration when a zone is on

Some useful, or not features

Home automation comes with features that are useful and/or fun in certain situations and not very useful in others. Voice control is in its infancy but can be used for simple control. E.g. “Turn on the air conditioner”, “play Misty for me”. The **Easy Irrigation system** can be voice controlled. For example, “water back lawn” or “turn on driveway lights”. Perhaps useful maybe easier to use a touch screen.

Systems using weather forecasts to control irrigation are implemented in some systems, but most reviews show they are essentially a sad gimmick and, in some instances, utterly useless! Who believes the weather forecast and which one? Would you let your seedlings die because the “forecast” said it would rain and if it does rain how much? Forecasted rain may not eventuate or be insufficient for

the plants’ needs so it would be unwise (even harmful to the plants) to inhibit a scheduled irrigation. Appropriate human decisions are hard or even impossible to automate so good systems should make implementation of needed human decisions extremely easy and quick. Full automation has a way to go but the technology is progressing rapidly. For example, a moisture sensor does not know if it is about to rain so it would be unwise to automatically and immediately commence irrigation. Maybe irrigation is already scheduled in a few minutes time. Maybe someone is standing on the lawn!

The Easy Irrigation system was developed in Australia with Federal government R and D assistance. It continues to evolve implementing useful and powerful features for its users and because it is computer based it has a high degree of future “proofness”!

Rain Sensor

Adding a rain sensor is a sensible addition to a watering system (and may be required due to local regulations) to prevent wasteful watering and prevent overwatering during periods of rain.

The simplest irrigation sensor is a rain sensor which either connects to the irrigation system controller or is connected into the wiring of one or more irrigation solenoid valves.

Most rain sensors are constructed as a simple switch. Whenever the sensor gets sufficiently wet, the switch turns off. When the sensor dries out (can be minutes or hours) the switch turns thereby enabling future watering. A normal rain sensor can be adjusted for the amount of “wetness” it needs to be activated i.e. to turn off).

The “switch” opens (turns off) when the sensor is wet and closes (turns on) when the sensor is dry.

However, with the Easy Irrigation-Landscape Control System the zones that require watering when raining e.g. glasshouses, undercover gardens etc, can be wired to bypass the rain sensor.

The Easy Irrigation control system is designed for virtually unlimited expansion and simple powerful control.

- one single cable for as many zones as desired
- Control as many independent zones as desired
- Simply add extra zones at any time
- Watering duration can be set to the second so not a drop need be wasted
- Drip irrigation can be cycled (e.g. turn on for 10 minutes and off for one hour).
- durations can be lengthened or reduced when a zone is on.
- Virtually unlimited schedules per day and in total.
- multiuser remote control
- WIFI, internet or just onsite control with a mouse and keyboard or touch screen
- use a tank, dam, mains or all of these.

- garden lighting
- mains powered devices - spotlights, misting, fans, etc

Plan for expansion and change, remembering that the controller may be the least expensive part of the installation that should last for many years.

*The **Easy Irrigation system** is a top end and very cost effective for larger and/or more advanced installations. It offer unmatched features and benefits. It is very easy to use and provides powerful, expandable and comprehensive features that suit many different installations from simple small domestic to complex commercial installations.*

For further information visit:

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