

# Choosing an irrigation system

## A brief consumer overview

An irrigation system might seem expensive to begin with but will pay dividends for many years providing pleasure as well as adding property value. Installing the best system for the property requires thinking about the landscape needs, its functionality and design for both now and in the future for control of watering, lighting, fountains, pumps pools, etc.

## Irrigation solenoid valves and "zones"

Irrigation controllers electrically switch irrigation solenoid valves on and off. The valves (called "irrigation valves" or "irrigation solenoid valves" or "irrigation solenoids") simply turn on/off a water supply to sprinklers, drippers, misters to a area (eg lawn, hedges, etc called a "zone"). Most use a 24volt electrical current but there are other types of irrigation valves. However, this is the most common and can be purchased at most hardware and irrigation suppliers. The number of zones is 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.

In most systems irrigation valves are connected to the controller using the 2 wires attached to the valve. For example, if an installation has 8 irrigation valves, there will be 9 separate wires (one to each valve and one "common" wire to every valve). These wires are normally in a multi-wire "irrigation cable" that must be laid all the way back to where the controller is physically located. More advanced systems use "powerline" technology so that a single cable can be used for all the valves. These advanced systems have devices (often called "decoders") attached to the single cable that then are connected to the irrigation valves. The Easy Automation LCS calls them "EasySwitches". The significant advantage of single cable systems such as the Landscape Control System (LCS) is that there is no need for re- digging and laying additional cable when a new solenoid valve is added, and garden layout is often much simpler. Since irrigation cable comes in a fixed number of independent 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.

## Controllers

Almost all controllers switch only irrigation valves and most controllers are strictly limited for the number of valves. A controller's capability is first determined by how many zones (sometimes called "stations") that it can handle. Typically, the number of zones is limited to 8, 16, 32 and more for expensive irrigation controllers. It is frustrating to run out of zones because either a second or new controller will need to be purchased. Additionally, new cabling will probably be required. It is

surprising how many zones are needed as gardens mature and change- new plantings, new lawns, etc.

If it is desired to also control lighting, a pump for later rain harvesting from a tank or dam, fountains, pool pumps, etc, then almost all traditional irrigation controllers are incapable of achieving all this.

## Screens, remote control, multiple users

Old style/traditional 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 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, some of these systems require access to control software on the web or smartphone. If internet access is not available or the "app" is not on your smartphone, then some controllers are reduced in capability or simply unworkable! The LCS does not need a special control app on mobile devices.

## Control capabilities

Simple controllers 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). Advanced controllers allow 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 control. Commercial growers often need control of pumps and diverter valves.

Conserving water and providing efficient irrigation is further enhanced with "wet and wait" cycling offered by some 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. For example, a duration of one hour could be implemented as 3 minutes on and 10 minutes off cycling over the hour. This is also useful for misting of plants.

## Scheduling

Most controllers are very limited in the number of "starts" per day and in total. This impacts users who need to schedule many zones and is especially important in hot summers and for bonsai, mushroom farmers, delicate seedlings/plants, etc. where several watering are needed in the same day.

Some plants don't like being watered before or after sunset (to minimise the risk of fungal infections)- very important for grape and rose growers. The Easy Automation LCS 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 sunrise time.

## **Advanced features- Sensors and more**

The most obvious feature is that of having sensors such as moisture and rain sensors. However, it is not clear that if a moisture sensor indicates that the lawn is dry then the system should immediately automatically water it. Perhaps it is midnight! Perhaps someone is standing on the lawn! Perhaps it is about to rain and so an automatic watering would result in overwatering. Similarly, for a rain sensor which in most cases simply prevents on or more valves from turning on.

Sensors can be used for precise control especially in commercial situations, but human decisions can't be replaced. More advanced systems offer the capability of several sensors but mostly only a very small number and limited in type (e.g. only moisture and/or rain).

Very advanced systems can also show the user alarm conditions such as dry conditions, excessive wind, high temperature, etc.

## **Landscape control**

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

The Easy Automation Landscape Control System can be a small simple irrigation system or expanded to directly control standard 12-volt garden lighting, many irrigation solenoids, multiple pumps, multiple diverter valves, purge valves, multiple sensors, swimming pool pumps 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 serviced by multiple zones since water pressure/supply is limited so 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.

The Easy Automation 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). Similarly, the Landscape Control System defines a "Group" whereby zones are all turned on at the same time- excellent for lighting (e.g. turn on the driveway lights).

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 of these useful features provided by the Easy Automation Landscape Control System are: -

- Viewing an ordered list of the next scheduled zones
- Viewing remaining time when a zone is on
- Viewing the last time on and duration for every zone
- Viewing schedules for any/all zone(s) or for any day
- Simply omitting a start for one or more rainy days
- Increasing/decreasing the duration when a zone is on

## **Some useful or not features**

Home automation comes features that are useful and fun in certain situations and not very useful in others.

Voice control is in its infancy but can be used for simple control; "turn on the air conditioner", "Play Misty for me".

Weather forecasts controlling irrigation is available in some systems but who believes the weather forecast and which one? Unfortunately, full automation has a way to go. A moisture sensor does not know if it is about to rain so it would be unwise to automatically commence irrigation. 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 to automate so good systems should make implementation of needed human decisions very easy and quick.

## **Summary**

Are you better off with a cheap controller? Will you be disappointed in the future? What are the needs now and in the future? Lights? Water pumps? Pool pump? Other? The controller is only a fraction of the cost of most installations. Changes and expansion will inevitably occur over time. Certain features may seem irrelevant now but essential (or fun!) to have in the future.

A landscape control system can bring time and cost savings adding value to the property but requires some thought before the more expensive and labour-intensive installation of cabling, piping and sprinklers. Plan for expansion and change, remembering that the irrigation controller may be the least expensive part of the installation that should last for many years.

*The **Easy Automation Landscape Control System** is a top end, system, easy to use that provides very powerful, expandable and comprehensive features that suit many different installations from domestic to complex commercial.*

*We hope the **Landscape Control System** suits your situation!*

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