Space-age technology for irrigation controls

Solid state technology, which has revolutionized communications, aerospace, finance, medicine and a host of other fields, has effected a major breakthrough in irrigation system controllers. For the first time, a controller, developed by Rockwell International for Johns-Manville, utilizes a microprocessor for regulating a wide range of irrigation processes and a calculator-type keyboard that, with a human input/output interface, feeds instructions, changes and programming to the controller. Also included is a digital display that indicates at a glance the time of day, the type of sequence, which station is operating, the time remaining and many other functions. The controller was deliberately designed with a "mushroom"-like appearance so that it blends with the environment in which it is utilized.

The solid state design of the Model KCS (Keyboard Controller Series) offers several important advantages over comparable electromechanical units. For example, reliability is better because less circuitry is needed, a feature that reduces the possibility of malfunctions. Due to the fact that the controller has one basic component, the microprocessor, instead of the multiple number of parts required in an electromechanical model, dependability is further enhanced.

Flexibility is another benefit offered by the controller. Despite its relatively small size, the transistorized microprocessor has the capacity for servicing up to 24 stations with a diverse number of functions. To illustrate, starting can be programmed in various ways — automatic, manual and even manual starting of a single station on a one-time basis.

Accuracy also is upgraded. The solid state design assures a station timing accuracy of ± .01 of a second. Water conservation is improved because the precise timing allows the operator to put down the exact amount of water required. For the same circumstances, the accuracy of electromechanical units can vary by as much as 20 percent.

Although station timing settings are normally regulated in minutes, the controller has the capability of switching to hour station times with the implementation of a toggle switch. Also, the time base is automatically compensated for the appropriate electrical frequency — 60 Hertz for domestic use, or 50 Hertz for foreign applications.

The microprocessor can handle four, 14-day schedules. Each station has the ability to operate with any one of the schedules. In this way, lawns and shrubs, as well as greens, tees and fairways, can be watered on completely different programs on the same or different days on the same controller.

Other programs that can be accommodated by the versatile controller include:

Skip Days — the irrigation cycle can be skipped from one to nine days, an ideal situation during rainy weather when irrigation is not necessary. The KCS will automatically resume the proper sequence at the conclusion of the skip period. The controller can be used in conjunction with a rain gauge whith tells how much rain has fallen, daily or year to date, to determine if irrigation is warranted.

Automatic Syringe — for cooling and disease control, a syringe cycle, with variable time, can be started independently of the normal irrigation program for all or preselected stations.

Multiple Repeat — the number of repeats after initial irrigation can be set from one through nine. A delay between repeats of up to 99 minutes can be selected when a single station is repeating. The number of repeats are common to all stations programmed for this cycle. This feature prevents run-off on steep slopes.

Other keyboard entries permit the controller to . . .

manually operate a station from .1 minutes to 99 minutes. This manual mode may interrupt a current sequence which shall resume without a time loss to the stations interrupted.

manually start or stop any sequence that would include all stations whether they are scheduled for that day or not.

manually start a sequence that would include stations scheduled for that day only.

recycle, on a continuing basis, the current or next start sequence — an important feature for grass seed germination periods.

calculate the total time for any irrigation sequence of any day including repeat time. This helps irrigation cycle scheduling so that it doesn't interfere with other activities. □