



Understanding Your Rain Bird ESP-SMT / Smart Controller

1. A departure from traditional time-based controllers.

Your new Rain Bird Smart controller operates in a very different way than traditional time-based controllers we've used in the past. Traditional time-based controllers are typically programmed water for a set amount every day or every other day regardless of changes in the weather. A typical setting might be 10 minutes per day. In this configuration, it doesn't matter if it's 65 and cloudy or 95 and sunny, your controller would still be watering just 10 minutes each day, because that's what it's programmed to do. So most of the time you'd be either overwatering (on cooler days) or under watering (on very hot days). On average, most people tend to *overwater* with time-based controllers. We set them based on what we think the landscape needs on hot days and then it overwaters on every other day that isn't so hot.

Smart controllers address this problem by monitoring the weather and automatically adjusting the frequency (how often) and duration (how long) of your watering schedule based on weather data. Your controller is configured with an on-site weather station and together they take into account exact rainfall, high and low temperature, wind speed, relative humidity, and solar radiation. They use these 5 weather factors to create a formula we call E.T., which means EvapoTranspiration. Evapo from Evaporation; water lost due to the sun or heat evaporating it. And Transpiration is basically the rate at which plants drink water that is in the soil. Using this formula, along with the information we've programmed into your controller about each zone (soil type, plant type, amount of shade, slope, etc.) your controller can accurately determine how much the water table in each zone has gone down each day. Once that water table gets to less than 50% full, it will water that zone the following day enough to "fill up the water table", so to speak. Which leads us to the first feature that is important to understand about your smart controller:

2. The Rain Bird Smart Controller only allows watering on zones that are low on water each day. Not every zone will get watered each day.

Some of your zones in your landscape are lawn zones, which "drink" water at a faster rate than plant zones do. Some of your zones are in full sun, which will use up more water more quickly than those zones that are in the shade. Some zones have plants that are new and need regular watering because their roots aren't fully developed yet while other zones have plants that are very mature and need water only once in a while. We've programmed your controller with all this information. So don't be surprised if your controller seems to water some zones regularly and others not nearly as often.

Your main concern should be how well the lawn or plants look in each zone. Don't worry so much about how frequently or how long they're being watered. Begin to be more results oriented rather than methods oriented and you will begin to understand your controller better.

3. Your Rain Bird Smart controller is designed to water less often and for longer durations.

In the past, you may have been accustomed to watering every zone every day or every other day. In this method of watering, you're attempting to always keep the water table near-full. But a more effective and more water-efficient method of watering is to let the water table go down a little before you water again. This encourages deeper root structure for both lawns and plants. If everything is programmed correctly, you should notice that all of your plants and lawn areas stay nice and lush and green now, despite that fact that you're now watering less often than you used to. During periods of cooler temperatures, don't be surprised if your controller doesn't irrigate for a week or two. Again, concern yourself more with the results than the methods. If your lawn looks lush and green and your plants look healthy, then it doesn't matter if the controller has not irrigated for 5 or 10 days. You may start to get worried because previously you might have been watering during this time. But resist the urge to concern yourself about frequency or duration, unless you see problems in your landscape.

4. Understanding the concept of the Cycle / Soak Feature of your Rain Bird Smart controller.

Because your smart controller is watering less frequently than you probably used to water, it is going to have to water for a longer duration. So rather than watering 10 minutes each day, your controller might wait 4 days and then want to water 24 minutes. The problem with watering that long is you may start to get some run-off or pooling of water if you have heavy soils or if there is any slope to this zone. So knowing this information, your controller will break the watering up; what we call Cycle and Soak. The type of irrigation you have in this zone plays a big role in determining when the Cycle and Soak as well. It works like this: Let's say you have a lawn zone that has clay soil with a slope of 4%. Based on that information, your controller is going to calculate how long it can irrigate for before run-off is going to start to occur. Let's say it figures that number to be 8 minutes. So rather than watering for 24 minutes straight, your controller will "Cycle" for 8 minutes, wait 52 minutes for the water to "Soak" in, Cycle for another 8 minutes, wait 52 minutes for the water to soak in again, and then finally water for a final 8 minutes, for a total of 24 minutes. It may seem very odd and abnormal to see one zone come on 3 times in the same day or same morning, but it's actually a good thing. By doing this, you're preventing run-off and saving water.

Don't worry if one or more of your zones seem to come on more than once a morning or once a day. Once you understand the Cycle & Soak feature, you'll understand why this happens.

5. Your Rain Bird Smart Controller knows all sorts of information about every zone in your yard.

If your controller has been programmed correctly, your controller will know all sorts of information about the different zones in your landscape. Your contractor will tell the controller what type of lawn or plants you have in that zone; what the soil type is; how far apart your plants are spaced; what the watering needs of those plants are; how much slope you have in that zone; the amount of sun or shade; and more! Armed with this information, your controller will know best when each zone needs watering and when it doesn't.

6. Smart Controllers aren't perfect. Some minor adjustments may be necessary.

In our experience, having installed almost 100 of these in the area over the past two years, most of the time there is no additional adjustments that need to be made after the initial programming is done, if it's been programmed correctly. But there's a chance it wasn't programmed correctly. Perhaps the installer calculated that a zone had 50% shade, when in fact that zone has more like 75% shade. In this case, you may notice it's a little too wet in that zone. Or perhaps the installer assumed that your planting bed was mostly clay soil when in fact, you've amended to soil to the point that it's mostly loam or sandy loam. So water is going to go through this type of soil much faster than it would if the soil were clay. In these cases, re-programming may be necessary. It happens. But most of the time, the adjustments that need to be made are minor and no re-programming is necessary. Most of the time, just some "Fine Tuning" adjustments will take care of any minor over-watering or under-watering issues that come up in your landscape. And you can make these "Fine-Tuning" adjustments yourself, quickly and easily.

7. Fine tuning your Rain Bird Smart controller.

You can adjust any zone UP or DOWN up to 30% either way. If, after a month or two, a certain zone seems to be constantly too wet, you would want to adjust that zone DOWN 10% or 20% or 30% maybe. You can't turn down the number of minutes that it waters – because that number varies all the time. But you can turn the watering DOWN by a percentage. So turn your dial on your controller to the FINE TUNE WATERING area and follow the simple prompts to turn your zone down, if needed.

Conversely, you may notice after a few months that a certain zone seems to constantly a little stressed out. In this case, you'd want to use the FINE TUNE WATERING function to adjust this zone UP 10% or 20% or 30%.

As you notice minor problems in your landscape (too wet or too dry), just use your FINE TUNE WATERING feature to adjust those. But keep this in mind; if you need to adjust more than 30%, then it's time to call the installer back and get them to re-program that zone. You should never need to adjust more than 30% up or down in any given zone.

8. Don't concern yourself with the programming part of your controller (the areas marked in blue).

The Blue areas of your controller are for initial programming only (typically done by your installer or contractor). After initial programming, you shouldn't ever have any reason to change the settings in this area. And unless you're an engineer or are naturally a very analytical person, you're probably not going to want or need to understand the programming area of your controller. Your controller is equipped with an internal lithium-ion battery that could remember the current time, date, and settings for up to 5 years if left unplugged. So there would really be no reason to need to re-program. Besides, this should be your contractors' job anyway. Isn't this what you paid him the big bucks for anyway? If you really feel that the FINE TUNE WATERING adjustments aren't making enough of a difference and you need some re-programming, then call your contractor and have him reprogram this for you. That should be part of the product and service you have already paid for – to a reasonable extent.

F.A.Q. (Frequently Asked Questions) and Troubleshooting Guide:

Q. “My controller isn’t watering often enough. I am having to water manually because it’s not coming on as frequently as needed.”

A. First question you need to ask yourself is; “Does the lawn look green? Healthy? Do the plants look healthy?” If the answer is yes, then you’re probably over-thinking things. You’re used to a time-based controller that would come on every day or two, as programmed. These Smart controllers are set to water *less* frequently and for much longer duration than you have probably been used to. This method helps establish deeper roots. So where before you might have watered for 10 minutes every day, this system might try to water 30 minutes, every 3 or 4 days.

The main thing is this; if your lawn and plants still look healthy, quit over thinking it and quit worrying. On the other hand, if your lawn or plants are looking stressed, please Section 7 of this document regarding Fine-Tune Watering. If you’re not able to fix the problem by increasing the % on the affected zone, please call us so we can take a look at the programming. We may need to tweak the programming if you’ve already adjusted the % and it’s still not keeping your landscape looking good.

Q. “My controller is watering every day. I thought you said this thing would water *less* than I used to. Why does it water so often?”

A. The only time your controller should actually be watering every day is

1. if you either have very sandy soil
2. Have annuals or plants with high-water needs in that zone or
3. It’s been very hot out lately and water demands are up more than usual

Otherwise, your controller probably isn’t water *every zone* every day. More likely, it may be coming on every day but watering *different* zones each day. Please consult section 2 of this manual.

Q. “One or more of my zones are coming on several times per day. This thing must be broken!”

A. Unlikely that it’s broken. It’s just going into Cycle & Soak mode. Please consult section 4 of this manual.

Q. “One of my zones is constantly too wet or too dry”

A. First, try using the FINE TUNE WATERING section of your controller. Chances are good that you just need to fine-tune that zone. Please consult sections 6 and 7 of this manual.

Q. “I am getting an ERROR message on my controller that reads, ‘Controller has lost communication with Pod’ What does that mean?”

A. That could mean the wire going from your Smart controller to your weather station unit has been cut or severed. Call your contractor to have him fix or replace the wire.

Q. "I'm getting an ERROR message that reads, 'Unable to finish irrigation within watering window'. What should I do?"

A. Press the button that says, "Ignore" to make this error message go away. If this message occurs only once in a while just during hot spells, it probably isn't much of a concern. Any watering that didn't get done today, will continue first thing tomorrow. But if you notice this message re-appearing often, then you will need to contact your installer / contractor and have him open up the watering window to a little longer period of time.

Q. "It seems like one of my zones hasn't come on at all this season. I don't think that zone is working at all."

A. This could be a programming error. But it is unlikely. It is more likely that this zone doesn't need very frequent watering. Zones that are in full shade, have established plants, and have plants with low-watering requirements might not need to have much supplemental watering. It's likely that you've been watering that zone for years WAY more than you ever needed to. A good barometer is to just check how your plants or lawn look in that zone. Does everything look healthy? If you don't see any signs of stress, chances are your controller is doing everything just right.

If you want to double check, you can turn the dial to SYSTEM REVIEW and chose EVENT LOG and EVENTS BY ZONE. Then select the zone you're concerned about and you'll be able to see when that zone watered last. If it's a few months into the dry season, you should *probably* see at least a few watering cycles there for the year. If not, might be time to call your installer / contractor so he can double-check the programming.

Q. "It rained today / yesterday and my irrigation system still came on today. Why?"

A. Your system *knows* it rained and knows how *much* it rained. Chances are, the total amount of precipitation in inches is less than what your zone(s) needed today. So although we may have seen $\frac{1}{4}$ " of rain yesterday or last night, we may have needed $\frac{1}{2}$ " of watering today. Your system is accounting for that and has probably *decreased* the irrigation schedule to account for the rainfall. But that doesn't mean that just because it rained a little that you still don't need some additional irrigation to fill up the water table.

Q. "It is rainy and cold today. Why would my sprinklers come on, on a day like this?"

A. First of all, please understand that your Smart controller will stop once it senses more than about $\frac{1}{20}$ th of an inch of rain. So if it's still coming on today, chances are it hasn't rained that much yet. But it will stop watering once it measures a sizable amount of rain.

As for why it would water on a cold/rainy day like this, please understand that your Smart controller can only see the past, not the future. And it's been calculating how much the water table has been going down every day for weeks. Based on the weather over the past several weeks, it decided that your landscape needed some water today. Unfortunately, your controller had no way of knowing the weather forecast. So while it may well be rainy today, it probably wasn't very rainy when it came on this morning.

Regardless, your new Smart controller is much better than a traditional time-based controller would have been. If you had a time-based controller, it would have watered automatically today too. And tomorrow.... and the next day.... This controller isn't 100% efficient. But it's quite a bit more efficient than any other option on

the market. There may be days like this where your sprinklers come on and then it also rains later in the day. But you're still saving a good 30-70% water using this controller than if you had been using a regular time-based controller.

Q. I turned my controller off (or to manual mode) and somehow it still seems to be watering automatically each day. Why?

A. Often people assume that if dial is not set to the "Auto" area that it won't come on automatically. That's an erroneous assumption. The controller will still water automatically as it feels necessary in any position on the dial EXCEPT THE OFF POSITION. So even if you have left the dial in "Manual", it will still come on automatically. If you truly want your system to be off, please be sure the dial is in the "OFF" position. This is the only time it will ever really be off.