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NetWatchman White Paper Series

Controlling Sprinklers with Internet Based Weather

Overview

NetWatchman includes an add-on feature that controls up to 8 sprinkler valves based on weather information updated via the internet. This white paper provides more detailed information on equipment required and operation / features.

Equipment Required

Sprinkler control operates through NetWatchman's Home Automation interface – you must own the Home Automation Package. Sprinkler control currently uses x10 signals that travel over your home's power wiring. Automation, specifically X10 automation, is discussed in the HomeOwner's Reference Manual. At this time, the sprinkler controllers supported by NetWatchman are all X10-only devices. Because X10 signals may not always reliably transmit through the wiring of all houses, there is some possibility that sprinkler control may not operate reliably. We suggest that you are familiar with X10 before purchasing sprinkler control equipment and that you specifically test the path between your NetWatchman Home Automation Module and the proposed sprinkler controller outlet. If the automation module and the sprinkler controller will share the same outlet the risk of reliability problems is much smaller. The X10 sprinkler controller we have tested is IrrMaster available from www.HomeControls.com

Look for exciting news from Genesis as we expand the capabilities of our Sprinkler Control feature set.

Skills Required

Installing any sprinkler controller requires special skills. Other than familiarity with X10 limitations, there are no special skills required for this product beyond what would be expected if you were installing any type of sprinkler controller from any hardware store. However, if you have never installed any type of sprinkler controller from a typical hardware store, you should be aware that sprinkler controllers require plumbing skills and the ability to cut, splice and properly mount heavy gauge, low-voltage wiring.

Purchasing IrrMaster / Support Questions

You must purchase your IrrMaster Sprinkler controller from a distributor who carries the product. In addition to HomeControls.com, a recent Google search located several companies retailing the product. We do not stock IrrMaster.

While we certainly do answer questions and provide support for the programming of Sprinklers on NetWatchman, we do not directly support the basic installation. This means that you must be able to install IrrMaster and operate valves manually by pressing buttons on the front console. Until you are successfully able to operate all valves by pressing these front panel buttons, we cannot answer your questions/calls (calls should be directed to IrrMaster or the retailer). We cannot support basic X10 questions or problems. You must own at least one manual X10 controller that you have purchased from someone other than us (Radio Shack, www.X10.com, etc). Once you have installed your IrrMaster controller and are able to control it manually from it's front panel buttons, you must then be able to operate it remotely by pressing buttons on an X10 controller. If you experience problems at this step, you will need to call X10.com or the retailer from whom you purchased IrrMaster. After you are able to complete these first two steps, you are ready to program NetWatchman for Sprinkler Control – we would be pleased to answer questions you may have at that level.

Limitations

And now a brief word from our legal team. We are not responsible for errors in the weather forecast. This is a very simple system that places imprecise weather forecasts into one of four broad categories – there's plenty of room for error. We are not responsible for communications failures or other equipment failures that may cause plant damage, water damage or excessive water usage. It is possible that a valve may turn on and stay on indefinitely or that your yard may die because the system failed. Automatic sprinkler systems can cause freeze damage in cold weather. We are not responsible for frozen water damage.

Obtaining and Updating Weather Information

NetWatchman maintains a forward looking seven day weather forecast. It obtains this forecast by periodically linking to internet weather via a call to our computers. This call is typically placed late at night and updates the current day forecast plus 6 future days. In addition, a forecast value is assigned for 'beyond the week'. If your NetWatchman loses contact with our computers for more than the seven day forecast it will indefinitely execute the 'beyond the week' forecast. You decide how often the call is placed when you setup the sprinkler feature. More often, even daily, results in a more accurate forecast but higher phone costs. Less often saves money at the expense of missing a fast moving change in the weather.

The weather for each day is forecasted into one of four possible categories. Precipitation is the first category and includes rain of all kinds and snow. Precip also

includes daily high temperatures that are at or below freezing. If precip is forecasted it takes priority of all other categories. While the definitions of the remaining categories will vary based upon your geographical location, the remaining categories are:

- Seasonably Cool: This is typically average weather above freezing for the colder part of the year in your geography (usually your seasonal norms October through April).
- Seasonably Warm: This is the average weather for the warmer part of the year (usually your seasonal norms for May through September)
- Unseasonably Hot: Unusually high temperatures or unusually low humidity for your geography.

Note that the 'beyond the week' forecast is almost always 'seasonably cool' or 'seasonably warm' unless your geography has an average daytime high of freezing for this month (in which case 'beyond the week' is set to 'precip').

Daily Watering Time

For this system, you do not schedule individual valves – more on that later. Instead, you schedule a start time. At that time every day, the system will look at the weather forecast for the current day, it will look at the number of days since each individual valve operated and it will decide to schedule that valve as part of today's operation. Suppose your daily watering time was 5am. At 5am everyday NetWatchman will look at today's forecast. Suppose today is 'seasonably cool'. Now, based on a seasonably cool day, how frequently should valve #1 operate? Suppose the answer is every third day. If valve #1 was last operated four days ago, it will be included in today's list of valves. If valve #1 operated yesterday, it will not be placed on the operating list for today. Returning to the earlier assumption that valve #1 will operate today, the question becomes how long it should operate. Your answer may that valve#1 operates for 16 minutes on a 'seasonably cool' day. This calculation is repeated over all eight valves --- and then the watering begins.

As a practical matter, you should never schedule the daily watering time so that watering is in progress when NetWatchman is also scheduled to call for a weather update. It does actually work...but explaining how it deals with a weather forecast that just changed is far too complicated for this text.

To keep life simple, we suggest you limit your design to watering no more than once per day. You should know, however, that NetWatchman does support up to two cycles per day and that individual valves can be watered in both cycles. You can even select which valves operate in which cycle. Although it is rarely important, the watering cycles can also have a different start time based upon 'cool/precip' days versus 'warm/hot' days. You can even elect to use the twice-per-day timing only during the 'warm/hot' times of the year. To avoid confusion, however, we will initially setup your sprinkler feature with only one daily cycle.

Setting Up Valves

Each valve, of course, has a name you assign – up to the 8 possible valves. For each of the eight valves, you assign 8 values (that's up to 64 things you need to pre-plan).

The 8 values are two values for each of the four possible weather categories. So, for 'seasonably cool' weather on valve #1, here are the two questions:

- How often does it operate? (your choices include: never, twice per day, once per day, every-other-day, every-third-day, every-fourth-day, and so on out to weekly; if you are using multiple cycles per day, you also choose the cycle);
- How long does it operate? (Your choices start at 4 minutes and go to 64 minutes in four minute increments).

Making Changes

As with all add-on features, we are pleased to install and initially setup the software for this feature. With most NetWatchman features you have two choices for making ongoing changes --- you can 'do-it-yourself' using our windows software application Nethome/PC (available for free by downloading from our website) or you can ask us to make changes for you by submitting forms via email (also free). We believe that most of our customers who choose a very advanced feature such as sprinkler control will prefer to use NetHome and that is our strong recommendation. Sprinklers is one of the few features where we limit email/forms support. We will provide free changes via forms submitted via email for the first 120 days after the feature is installed. NetHome/PC remains free after 120 days but charges will apply to email submitted forms.