



SiteProTM

Central Control System

Getting Programmed Manual

A Basic Guide for Programming SitePro

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A Basic Guide for Programming SitePro™ Advanced Irrigation Control Software

from The Toro Company

Welcome to Getting Programmed with SitePro, your field guide to the basic programming steps needed to get your new central control system up and running. SitePro, the most advanced irrigation site management system available, is quick to program and easy to use.



Before you start programming, you may want to review the SitePro Getting Started Manual. It provides you with a road map of the control system software and an overview of SitePro's features.

Getting Programmed is intended for users familiar with central control systems, and provides only the basic steps needed to program SitePro for irrigating your site. **Please read through the entire *Getting Programmed Guide* before you begin.** For further help in optimizing your system, you can use SitePro's extensive on-line Help screens.

1. Basic System Setup

After launching the SitePro software...

❶ **Select the language and units.** Go to Setup on the menu bar and choose Language/Units.

(Setup < Language/Units) Default is English and U.S.

Select the language in which you want the screens to appear and the units of measure.

❷ **Select the system hardware.** (Setup > Hardware)

Select the field hardware used and set up satellite communications. Doing this configures SitePro so that only features appropriate to the selected hardware type are highlighted throughout the software.

Selections that don't apply to your hardware are grayed out.



Once the hardware type is selected, you cannot select another hardware type unless you start over with an empty database.

❸ **Configure the System Settings**

- **Set the “System Update at” time.** (Setup > System Settings > Update Time) It is recommended that you turn off the system update time when you start programming SitePro so automatic system updating doesn't interrupt your programming. Do this by clicking the checkbox in front of “System Update at...”. When you are done programming, remember to go back to this screen to activate the time of day you want the system to automatically update.

- **Set the “water-time window”** to the desired times. The water-time window does not actually control when irrigation starts or stops; rather, it provides you the opportunity to be alerted if any programs exceed the water-time window when the “Alert When Exceeded” box is activated.

- **Site Setup.** (System Settings > Site Setup) Go to the different tabs to name your site, set the type styles (font) for the site name and whether you want the graphic to show full screen. You can also change the Main Screen graphic if you have a different bitmap file you prefer. Select the map coordinates for you site and choose the map type you are using.

- **Alarm Notice.** (System Settings > Alarm Notice)
Define how you want SitePro to notify you of alarms.

Basic System Setup (cont.)

④ Save your data. (File > Save As)

- Enter the file or job name. If you are doing a “save as” using the existing file name, click “OK” on the box warning you that you are about to erase your existing data. This saves the data and relaunches SitePro.
- Continue to save your data periodically throughout the programming process.

2. Defining Demand ET

After opening the Demand ET screens (Setup > Environmental > Demand ET)...

① Select ET Sources. (Demand ET > Select Sources)

Select several ET sources so you have an ET source value available to use in an irrigation program. “Prog Man” is Program Manual ET which allows you to select ET to apply by program.

② Enter a manual ET to allow ET-driven run times to appear later. “Manual ET” must be a source chosen in the Select Source screen. Next, go to the Summary screen and highlight “Manual ET” in the table. Click the “Update” button to activate a window that allows you to enter a manual ET value.

3. Defining Site Codes

Site codes are not necessary for SitePro to irrigate, but they can be a valuable tool.

Site codes allow you to have an “always” adjustment to station run times to reflect station micro climate differences. For example, if four stations have the same precipitation rate, yet one of them is in the shade with tighter soil, regardless of the run time for these four stations, the station in the shade needs a permanent percent adjustment for each run time calculation.

Site codes can also be useful for assigning stations to programs. When building programs using the Auto-Assign feature of SitePro, in addition to sorting stations by “Name” and “Area”, you can sort by “Site Code”. If you want to be able to easily sort stations to build programs, think of how you might want to sort them using site codes, then devise your own custom site codes that would allow you to do so. Site Codes can be used to set up additional watering cycles or to fine-tune stations by two methods: Percent Adjust or Run Time.

4. Defining Nozzles

① Select available nozzles. (Setup > Environmental > Nozzles > Select Nozzles)

To select specific nozzles within a folder, double click on the folder. This opens the folder and lists individual nozzles. (This step tells the system what sprinklers and nozzles you have.)

② Review nozzle performance. (Setup > Environmental > Nozzles > Select Nozzles)

Review the performance tables for the selected nozzles.



If you want to create new nozzle records, type over an existing name field. Any changes you make to factory settings, or new records you create, will be displayed in blue when viewed on other screens.

5. Planning Programs

Before you set up the control system, it is important to plan out your irrigation programs in advance. Define your basic program names exactly as you plan to irrigate.

Typing program names.



SitePro is case sensitive. Therefore, if you name a program “Greens” and then type in GREENS later, SitePro will not be able to locate it in the database. You might want to get in the habit of using all capital letters. Also, when naming programs, SitePro will not allow hyphens or spaces in the name. You can use the underline key instead. For example: GREENS_F9.

Hint: Abbreviations make for faster programming later on.

- 1 Organize your programs on a piece of paper. Sequence them in order of importance.
- 2 SitePro runs programs within satellites. A program will run one station at a time within a satellite. The stations within a program will run in numerical order. To run stations within a satellite concurrently, stations need to be assigned to different programs. Ideally, there should be eight to 12 stations on a single program within a satellite. For example, if you have 20 stations in a satellite, each with a run time of 20 minutes, and all the stations are assigned to the same program, that satellite would run for 400 minutes (20 stations x 20 minutes). You may want to define three different programs for that satellite in order to force a shorter watering time. This also spreads out the flow in each fairway.

For example...

Fairway A (Fwy_A) could water stations 1 through 7 on a satellite;

Fairway B (Fwy_B) could water stations 8 through 14;

Fairway C (Fwy_C) could water stations 15 through 20.

6. Setting up the Control System

Once you have organized your irrigation programs, you are ready to set up your control system.



*It is strongly suggested that you take **one satellite** completely through Steps 6, 7, 8 and 9, then stop and review how the stations will operate within your programs. This will give you a better understanding of the capabilities of the SitePro software. It may change how you want to set up your system.*

Set up one group, one satellite, and a hydraulic link to all the stations on one satellite...

- *Save the data, after setting up all stations on the satellite.*
- *Assign the stations to programs.*
- *Assign the stations to a Hydro-Link.*
- *Run a projected flow to verify that all station data is entered correctly. Stations with data errors will not run and SitePro will identify these for you.*
- *Review the Scheduled Activity report to see exactly when stations will run.*
- *Save your data again. You have assigned stations to programs and fixed any errors since your last save. Opening a previously saved version will wipe out any current changes you have made.*
- *Set up the next satellite following the above steps. Conduct a save after each satellite is complete.*



Stations will not operate without a Hydro-Link assignment. To view unassigned stations, run an Unassigned Stations report. (Go to Reports > Unassigned Stations or click on the Unassigned Stations button on the Reports tool bar.)

Setting up the Control System (cont.)

① Define groups of satellites. (Setup < Control System < Groups).

Define groups of satellites that allow you to control similar areas of your site at the same time. You can choose to control the system with only one group of defined satellites or up to 50 groups (32 groups for Central Decoder Systems).

② Define satellites. (Setup < Control System < Satellites)

Assign satellites to specified groups.

- **Satellite number:** You may want to use a numbering system that helps you identify the satellites. For example, satellite 011 could be on Hole 1 (01), satellite 1. Satellite #182 could be on Hole 18, satellite 2.
- **Enter a name and location that will help you identify the satellite.** The name will appear next to the satellite number on the station screen.
- **Station column:** Enter the number of stations assigned to this satellite. The default is the maximum number of stations allowed for the hardware type defined in the Setup menu.

③ Define stations. (Setup < Control System < Stations)

- You may want to use the “Name category” as station location and the “area” category for the name of the program you want the station to be watered by. For example: “Name” - “1 GRN left front”; “Area” - Greens



- Use “Notes” as station ID tag for further station information, such as “left front.”

Information entered in the station columns “Name” and “Area” is important for assigning stations to programs. The Auto-Programmer feature of SitePro can select stations for assignment to a program using three search criteria: name, area and site code. For this reason, we suggest you do not use the “Name” column for detailed station identification. There is a “Notes” column which can be used for detailed station identification.

- **Nozzle type:** Click in the field to activate nozzle drop down box.



- **Arc:** Make sure the arc is correct.
- **Enter the pressure.**

It is critical that the proper arc, spacing and pressure are displayed in order for SitePro to accurately calculate the right precipitation rate.

- **Spacing:** Verify that the default is appropriate.
- **Pattern:** Click in field to activate drop-down selection box to change pattern.
- **Site Codes:** These are optional and SitePro will run without them. However, they are one of the search criteria the Auto-Programmer can use when assigning stations to programs. (This field will not be visible if Site Codes were not defined in the Environmental screens.) We recommend you save Site Codes for fine-tune adjustments after updating your basic programs and observing specifics.

Use the copy/paste feature to enter duplicate heads in your station database table. Click on the station number to select the line that you want to copy. Click the “Copy” button. Move the cursor to the row you want to paste the information into. Clicking on the station number field highlights the entire row. Click on the “Paste” button to copy the data into that row.

When all stations have been defined, click “OK.”

7. Setting up the Hydraulic System

For SitePro to function properly, you must create a model of your hydraulic system and assign each station to a hydraulic element. What is the best way to build a hydraulic outline of your site? The most common ways are to group by hole, satellite or piping system.

Start by setting up one Source, one Main and one Hydro-Link to assign to your first satellite. This will give you a better understanding of the process. Next, define all elements of the hydraulic system. (Setup > Hydraulic System > Attributes)

❶ Click on the “Add Source” button and name the water source.

For example, “Pump Station_2000” could be a name for a pump station with 2,000 GPM.

❷ Add pipes to the water source.

When adding pipes...

- Make sure the pipe to which you want to add another pipe is highlighted first. For example, when adding multiple pipes to the source pipe, make sure the source pipe is highlighted each time you add another pipe. Otherwise, you will be adding a pipe to the one you just added, not to the source pipe.
- Use the red arrows to move elements up or down the hydraulic outline.
- Double clicking on a pipe expands it to show all attached pipes on the next level of the outline. Double clicking again hides the attachments for that level.



Deleting pipes: When you delete a pipe, all pipes attached to it are also deleted. Make sure the source pipe is not highlighted when you are deleting a pipe to avoid inadvertently deleting your complete hydraulic system.

❸ About the Source Flow Ramp.

When a water source is highlighted on the hydraulic outline, the “Flow Ramp” button is activated. Click on it to view and edit the flow ramps. As a default, SitePro takes the maximum flow rate of the source, divides it by 5, and allows for one minute ramps. You can enhance your flow management by defining up to five flow ramps for the highlighted source.



The first step of the flow ramp needs to be greater than the largest flowing station.

❹ Create Hydro-Links by assigning stations to pipes. (Setup > Hydraulic System > Assign)

- Highlight the pipe to which you want to link the station to.
- Double-click on the group you want to assign to view the satellites.
- Double-click on the satellites to view the stations.
- Click on the station you want to attach to highlight it.
- Click on the assign button or drag and drop the station to the pipe. When the attachment has been defined, a Hydro-Link designator appears to the left of the station number.



When naming your pipes that have sprinklers directly attached, you may want to include a reference to the satellites that are being serviced by that Hydro-Link. This will speed up your next step.

❺ Review Hydro-Links. (Setup < Hydraulic System < Review)

Because a station will not water unless it has been assigned a Hydro-Link, it is important to review the station assignments. To do this, click on the pipe or flow zone that you want to review and make sure all stations are attached.

Setting up the Hydraulic System (cont.)



Helpful Hint: *If stations are missing Hydro-Link assignments, run an Unassigned Stations report. This will list stations not assigned to a Hydro-Link or to a program. You can also generate a projected flow graph or a perform a manual download. After doing so, check the Flow Log screen (F-Log button on the tool bar). Any stations missing a Hydro-Link are displayed in this text report. Next to the station number, a “Hydro-Link not assigned” message appears and the flow rate will be equal to zero.*

8. Setting Up Irrigation Programs

- ❶ **Name the program exactly as you want it.** (Setup > Programs > Summary)
(Remember, SitePro is case-sensitive.)
- ❷ **Select a schedule.** (Setup > Programs > Schedule)
- ❸ **Select the active days.** (Setup > Programs > Active Days)
Make sure the appropriate active days are green in the bottom panel.
- ❹ **Determine a run-time calculation method on the ET Use page.** (Setup > Programs > ET Use)
 - *User-defined method:* You must have a default run time entered in the run time window. The default run time is used as a base number and is adjusted by percent depending on the ET source or by the percentage adjustment called out in the program. The default run time is tied to the reference ET.
 - *ET Auto Adjust:* See the on-line Help Topic “Setting up the ET Use Page” in the SitePro software for further information.
 - *ET Auto Calculate:* Uses the current day’s ET to calculate the station run times based on the precipitation rate of the nozzle specified. There is no default run time.
- ❺ **Define master program sequences.** (Setup > Programs > Start Times)
 - Define a master sequence so you can program one run time. Select the start time or end time.
 - Highlight the “System Programs” tab. Add a defined program to the sequence, and give it a priority and run time.
- ❻ **Assign stations to a program.** (Setup > Assign Stations)
 - Select a program. You can do this by satellite or group.
 - Click on the auto-programmer button.
 - Check the station search criteria by which you want to program: name, area, site code.
 - Highlight the field and type in the desired name, area or site code **exactly** as it was entered in the Control System Stations set up screen.
 - Click on the radio button to assign stations to the programs.
 - Click on “Assign”. The auto-assign window becomes active and shows the total station assignments removed or created.
 - Close the Auto-Assign window and assign stations to the next program.
 - If all is all right, click “OK”.

Setting Up Irrigation Programs (cont.)



For a quick review...

To see if stations are assigned, look at the run time displayed in the “n-time” column. If “A” is displayed, the station run time is determined by the ET auto-calculation method. If the run time is 0, then the station is not assigned. You can also run an Unassigned Stations report which lists stations not assigned to a program or a Hydro-Link.

Troubleshooting tip: Check to see that you spelled the program name, area or site code exactly as you entered it in the Control System Station set up screen.

❶ **When you are done assigning programs and stations**, go to the Water-Time Review Reports. (Reports > Water-Time Review) Generate a report so you can review programs assigned to satellites and verify run times. This is the best way to view that all programs have been assigned and that all stations have been assigned.

9. Running a Projected Flow

Before you enter the remaining information (other groups, satellites, stations and programs) into SitePro, you may want to verify that your first program operates as you expect it to. Do this by running a projected flow.

- Highlight a source for the projected flow graph, and set the projected flow time and window.
- Click on the “Graph” button to display the report.
- When the flow update is in progress, you can view the text messages as it builds the irrigation cycle.
- Any errors are logged in on the Flow-log Report.

If you have programmed SitePro correctly, you’ll get a projected flow graph.

10. Completing Programming

After you have planned out your programs and successfully created the first program, you are ready to complete your SitePro setup. If you need further help with setting up your central control system, or want to take advantage of SitePro’s advanced irrigation features, refer to SitePro’s extensive on-line Help screens, or contact the Toro National Support Network (NSN) at 1-800-527-4248.

