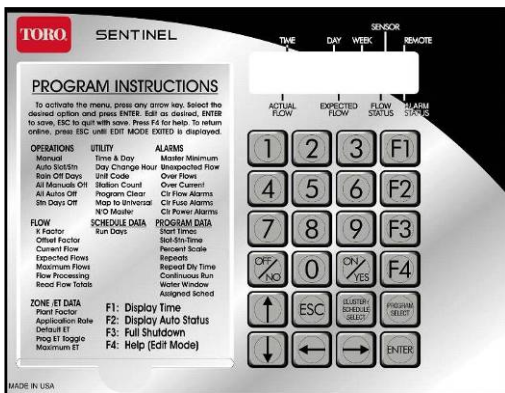




Count on it.

TORO[®] SENTINEL[®] QUICK START GUIDE



Version: 6-3-2010

QUICK START STEPS

This guide is designed to show you the minimum initial steps to program a Sentinel controller *using the Sentinel WMS Software* so irrigation occurs. The primary steps we will be following in the quick start process are:

Where	Section	Function	Action
Controller	UTILITY Menu	Unit Code	Set Unit Code
Software	SETUP	Database	Create New Database
Software	MANAGE	Master List	Create Unit
Software – Satellite	Setup Directory	Special Data – Comm Settings	Setup Communications Method
Software – Satellite	Setup Directory	Special Data – General	Receive Satellite Firmware
Software – Satellite	Setup Directory	Time & Day	Synchronize Time
Software – Satellite	Setup Directory	Special Data & Zone Data	Two-Wire Setup (if needed)
Software – Satellite	Programming Directory	Automatic Operations	Setup Irrigation Program
Software – Satellite	Programming Directory	Unsent Changes	Send Changes to Satellite

SETTING CONTROLLER UNIT CODE

IMPORTANT: *The unit code is required for Central Control operations. Even if most of the satellite programming will be from the central software, you need to set the Unit Code. All other controller settings can be made from the Sentinel Software.*

1. From the default screen (press ESC twice to reach screen if not in it), press the **Right Arrow Key** on the controller keypad until **UTILITY** is displayed in the screen.
2. Press the **Down Arrow Key** until **Unit Code** is displayed in the screen
3. Press the **Enter Key** to view the Unit Code entry screen.
4. Position the cursor using the Right and Left Arrow Keys under the digit being edited. Use the numeric keys on the keypad to enter digits. **Enter a unique three-digit Unit Code from 001-999.**
5. Press **ENTER Key** to Save Unit code.
6. Press **ESC Key** twice to return to Default screen. You have finished in field programming.
7. Repeat at each controller.

SOFTWARE & DATABASE SETUP

1. Verify that Sentinel WMS is properly installed on your computer.
2. Double Click on the Sentinel WMS Icon (identified as a Red Clock) on your desktop to **open the Sentinel WMS interface**.

Note: Be patient, Sentinel opens slowly. If you double again, you will open a second application – check your taskbar to insure only one Sentinel application (red clock icon) is running.

3. Left Click on **SETUP** in the left hand side of the upper tool bar.
4. In the Software Setup Window that opens, click on the **Database Tab**.
5. Select **Create new database**.
6. **Name and save your database** wherever you want your database files to be kept. Database will be saved as a .mdb (Microsoft database) file.
7. You should get a confirmation that database has been created. Click **OK**.
8. Click **Save** in upper left of window to select this database as your current operational database.
9. You will get a warning regarding database changes. Click **Yes**. The “Location Of Sentinel Database” area will now display the saved location of your database
10. You may now close the Setup Menu by clicking **Close**.

UNIT CREATION

You must now create your Field Units in the Sentinel Software.

1. Left Click on **MANAGE** in the left hand side of the upper tool bar.
2. In the Manage Window, click “+” (**Plus Sign**) on the right hand side under **Master List (all units in database)**.
3. A popup screen will appear allowing you to enter a Unit Code and Description for the controller. You must **enter the same unit code(s) as you entered in the field**. You may enter a unit description (location, etc) at this time, or do it later in the process.
4. Click **OK** once Unit Code and Description are entered.
5. This unit should now be created in the Master List and visible in the Left-hand Navigation Tree of the Software Interface.

Note: This screen also gives you the ability to create “Systems.” Systems are sets of multiple controllers that allow shared adjustment, rain days, etc. Creation of a system is not required for irrigation.

6. You may now close the Manage Window by clicking **Close**.

UNIT SETUP

1. Go to the **Left Side Navigation Tree, Satellites Tab**.
2. **Click on the Satellite Unit** just created. This should expand the unit menu tree.
3. Under the **Setup** Directory, click on **Special Data**.

Note: When the Special Data window opens you will see it opens on the “General” Tab and that the Controller Firmware Version is grayed out. We need to “receive” this firmware version from the controller so Sentinel knows the capabilities of the controller. But first, we need to set up our communications method.

4. In the **Special Data Window**, click on the **Comm Settings Tab**.

In the Comm Settings menu, you need to set up how you will communicate to the target field controller. In newer version of Sentinel Software, you can select the “**Profile**” of the communications method you are using and fields that do not apply are disabled.

Setup Communication Parameters

In the **Comm Settings** tab:

Communication Method	Settings
Direct Connection (Serial Cable)	<ol style="list-style-type: none"> 1. Choose the communication (Comm) port of the phone modem, central interface, or satellite (if connected directly). If the Comm port number is higher than 4, select the Connect Using option and enter the Comm Port number; i.e., COM6.
Landline Phone / Phone Modem	<ol style="list-style-type: none"> 1. Enter the Phone Modem Initialization String if using a landline phone. 2. Enter to the Field Access Phone number of the satellite if you are using a landline phone connection. <p><i>Note: If this setting is not known, try entering AT&FE0DT or ATE0DT, or contact Toro NSN for assistance at 1-800-275-8676.</i></p> <ol style="list-style-type: none"> 3. Enter a Post Dial (initiation) String if applicable.
Ethernet / Internet	<ol style="list-style-type: none"> 1. Enter the Field Access URL <p><i>Note: This is the IP and Port address of an Ethernet connection, for example, 10.0.0.4:10001. The address can also be entered in URL format; i.e., www.hostname.com:10001.</i></p> <ol style="list-style-type: none"> 2. Ensure the Field Access Phone String is Blank

Choose **Save** to enter the selections

Receiving Satellite Firmware Version & Completing Setup

This procedure will establish two-way communications as well as ensure that the Sentinel WMS software will function properly with the current satellite firmware version.

1. Choose the **General** tab. The **Firmware Version** and **Checksum** data fields will be blank.
2. Choose the **Receive** button next to these fields to initiate the upload process from the satellite.
3. Upon receiving the firmware data from the satellite, choose **Save** to continue.
4. Select the **Max Stations On** number based on the number of satellite station outputs that can be operated simultaneously without exceeding the hydraulics of the system or the electrical capacity of the satellite.

Note: Exceeding the satellite capacity can trigger an alarm condition.

5. Choose the physical **Station Count** of the satellite, including MapTo Units
6. **SAVE** All Changes and **Close** Special Data Window.

TIME & DAY SETUP

Both the PC running the Sentinel WMS software and the satellite controllers have time-keeping registers that must remain synchronized at all times to maintain scheduled operations. The Time & Day window provides setup options for the time/day synchronization feature.

1. Click on **Time & Day** under the **Setup** directory of the Navigation Tree.
2. Select the **Send (synchronize)** option as Synchronize Always. This option enables synchronization to occur regardless of time variation.
3. Select the **Log Results** option to record all synchronization results.
4. Choose **Send Time/Day (synchronize)** to synchronize the satellite with the Sentinel WMS software.
5. Basic results of the synchronization process will be displayed in the text window. Select the Generate Detailed Results check box to display the results in full detail.
6. **Close** Time & Day Window

SETUP FOR TWO-WIRE OPERATIONS (If Needed)

For proper operation of a Two-Wire Decoder System, there are some additional steps that need to be completed:

1. Under the **Setup** Directory, click on **Special Data**.
2. In the **General Tab**, Click on **Irritrol/Two Wire Mode**.
3. **Save** and **Close** Special Data.
4. Under the **Setup** Directory, Click on **Zone Data**.

Note: The Zone Data Screen shows a spreadsheet-like detail on individual station information. You can enter a Type and Description for each station to aid identification, but it is not required.

For Each Two-Wire Station

5. Station Type must be set as Toro 2-wire.
6. For each station, you must enter the 6-digit alphanumeric address of the decoder as:
 - a. **Device Precode** = First 3 Characters of Decoder Address
 - b. **Map Unit** = Last 3 Characters of Decoder Address
7. Decoders can have 1, 2, or 4 Outputs. Assign a station to Decoder Output # of the decoder by setting **Map Station** = # (where # = 1, 2, 3, or 4, corresponding to the decoder output).

PROGRAMMING FOR AUTOMATIC OPERATIONS

1. Click the **Automatic Operations** under the **Programming** directory to open the Automatic Operations Window.

Note: Each satellite is capable of having 16 individual irrigation programs. The programs are organized in groups of four, called Clusters, with four programs assigned to each Cluster. Clusters are identified as A, B C, and D. Programs within the cluster are identified as 1, 2, 3 and 4. The Program window provides a separate tabbed page for each program.

2. Click on Program **A1 Tab**

Start times

1. To begin, select a **Start Time** check box. The selection box with a default time will appear.
2. Highlight the portion of the time display to be adjusted.
3. Use the scroll bars or enter the preferred time.
4. When finished editing the Start Times, choose **Save**.

Watering Days (Schedule)

Up to 16 unique watering day schedules can be defined. For identification, each schedule has a number assignment ranging from 1–16. To assign the program to one of the schedules, simply enter or scroll to the corresponding number in the “Selected Schedule” box.

1. In the **Selected Schedule Box**, select **Schedule 1**.
2. **Click on the Days to Water** in 6 Week schedule Displayed. Enter days individually in the check boxes, or complete Rows or Columns can be selected by clicking on the Week or Day label.
3. To name the schedule, enter a brief description in the text box above the schedule.
4. When finished editing the Schedule, choose **Save**.

Note: To assign this schedule to another program (tab), simply select the number in the Select Schedule Box during program setup.

Station Run Times

One of the most unique and powerful programming features of the Sentinel WMS software is the method used to organize and control satellite station outputs within each irrigation program. This method is referred to as “Program Slots.”

Program Slots are organized in a sequential matrix at the bottom of a Program Window, defined by 4 rows of 12 Slots, for a total of 48 slot positions. The program cycle operating sequence begins at the first Slot in row 1, and ends at the last Slot in row 4.

The station number is assigned to the label to the left of a slot and a run time duration ranging from 0 to 255 minutes is entered in the slot. Station numbers range from 0 (inactive) to 96. Stations can be assigned to slots in any order and as many times as preferred. If more than 48 Slots are required; i.e., for a 96-station satellite, an additional program must be used to assign the remaining 48 stations.

When an irrigation program is running, any slot with 0 (or blank) run time is ignored. A slot with an assigned run time duration ≥ 1 minute, but without a station assignment, will create a pause in the watering cycle for the assigned duration.

*Note: A key to using the Slots programming method, is to remember that the number next to each slot is the assigned **Station** number, **not the slot** number.*

1. **Select a Slot** by highlighting its label to the left.
2. **Enter a Station Number.** Multiple stations can be entered into a program using the Select stations option above the slots.
3. **Enter a Run Time** in the Slot
4. Repeat with additional Slots for all Stations in the Program.
5. When finished entering Stations & Run Times, choose **Save**.

Additional Program Parameters

The various settings within this portion of the Program window enable each program to be modified as needed for optimum control. As settings are made, the program setup status information will be displayed in the colored panel. Green and Blue indicate the selected parameters are acceptable. When an error or conflict is found, the cause/resolution will be flagged in Red.

- **Percent Scale** - Adjusts the run time of all stations assigned to the program by percentage ranging from 0 to 255% (100% = no change).
- **Cycle Delay** - Places a delay period, ranging from 0 to 255 minutes, between repeat watering cycles.
- **Repeats** - Enables the watering cycle to be repeated from 1 to 250 times per start time.
- **Water Window** - The Water Window is the period of time in a 24-hour day that automatic watering can occur. Selecting a **From** and **To** time defines the Water Window start time, duration and end time. A program that is running at the end of the Water Window is automatically terminated.
- **Continuous Run** - Selecting Continuous Run will automatically repeat the program cycle continuously for the defined Water Window duration.
- **Activate Auxiliary Pump** - Select this option to activate the auxiliary output (designated in the **Special Data** window) at the beginning of the watering cycle.

SENDING PROGRAMMING TO CONTROLLER

As edits are made to primary programming screens that affect the satellite (Auto Program, Special Data (SD), Zone Data (ZD), the Sentinel WMS program flags the edits as they are made, then clears the flag when the changes are successfully sent to the satellite. A quick and efficient way to verify the results of the data transmissions is by opening the **Unsent Changes** window.

1. Choose the **Unsent Changes** window from the **Programming** directory. Unsent changes are indicated by a check mark in the box under the associated Program Tab.
2. Select program(s) to update by choosing the associated program group button or by clicking on individual program check box(es).
3. Choose **Send** to update the satellite and generate a report in the **Results** pane.

This Completes Quick Start Programming. Irrigation Will Occur.

