TORO® Count on it.

TORO® SENTINEL® SATELLITE

QUICK REFERENCE GUIDE
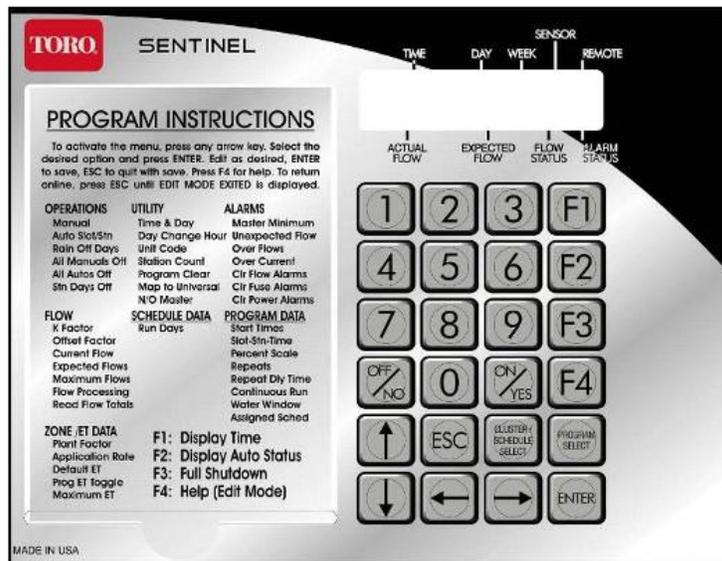
Version: 6-3-2010

CONTROL MODULE KEYPAD

The Sentinel Control Module has a 24-button keypad for use as the programming interface:

This keypad includes numeric buttons 1 – 9 and 0 used for numeric data entry. Also used in programming and operations are:

ON/YES & **OFF/NO** Keys		Used for manual operations as well as entering ON / OFF or YES / NO in programming.
ESC (Escape) Key		Used for exiting menus or Edit Mode and returning to normal operations (default screen)
ENTER Key		Used for functions like entering a selected submenu or saving information.
Arrow (Navigation) Keys		Used for navigating in Menus, Submenus, and Edit Modes, as well an incrementing values in programming.
CLUSTER / SCHEDULE SELECT Key		This button is used for selecting Clusters (groups of 4 programs) or schedules (run days) when programming.
PROGRAM SELECT Key		This button is used for selecting the Program (1-4) associated with a Clusters when programming.
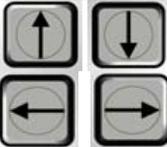
Also included are four F-keys are provided on the control module keypad to conveniently perform the following functions:

> **F1 Key** F1 - Displays the time.

> **F2 Key** F2 - Displays the status of the automatic programs.

> **F3 Key** F3 - Shuts down anything that is running (panic button).
> > **IMPORTANT:** *The F3 key is not functional while in the Edit mode.*

> **F4 Key** F4 - Displays context sensitive help while in the Edit mode.

CONTROL MODULE DISPLAY

The Sentinel Controller has a two-line LCD for display of information. When you first walk up to your Sentinel controller, the display should be in its standard mode showing current time, day, week (of schedule), actual flow (if anything running) and expected flow. This display should look something like the following:

Default Display	Upper Line	Lower Line
![display showing 07:18P MO W1 L / 00000 00000 A]	Time – 07:18 P (7:18 PM) Day – MO (Monday) Week (of schedule) – W1 (Week 1) Sensor – No current sensor indication Remote – L (Locked)	Actual Flow – 00000 (0 GPM) Expected Flow – 00000 (0 GPM) Flow Status – No current flow indicator Alarm Status – A (Alarm Exists)

The standard indicators in the display are as follows:

TIME	HH:MM	Hours : Minutes (12-hour format)
	A or P	AM or PM
DAY	SU, MO, TU, WE, TH, FR, SA, or SU	Two-letter Designation of Day of Week
WEEK	W1 to W6	Week 1 (one) of Schedule up to Week 6 (six) of Schedule
SENSOR	1	Sensor Activated - Switch sensor is in alternate of its Normal condition. E.g. If Normally Open, then 1 = Sensor Closed.
	O	Dry contact (switch) sensor is Open
	C	Dry contact (switch) sensor is Closed
REMOTE	L	Field Unit is in remote **"Locked"** mode. Hand held radio will not activate watering functions within this unit.
	A	Field Unit is programmed for **"All Call"** handheld radio operation. Controller will respond to any and all handheld commands transmitted.
	S	Field Unit is programmed for **"Secure"** handheld radio operation. Controller will respond only to handheld commands addressed to its unit code.
ACTUAL FLOW	00000	5-digit numeric indicator of current flow through connected flow sensor
EXPECTED FLOW	00000	5-digit numeric indicator of expected flow based on current stations operating and their expected flows.
FLOW STATUS	+	Actual > Expected (Overflow)
	--	Actual < Expected (Underflow)
	:)	Actual = Expected (Flow is happy)
	A	Flow Alarm Exists
ALARM STATUS	A	Alarm Exists – Blank Otherwise

PROGRAMMING OVERVIEW

The Sentinel Controller is programmed by navigating through a Main Menu which includes seven options: **Operations, Utility, Alarms, Flow, Schedule Data, Program Data**, and **Zone/ET Data**. Each of these Main Menu options has a Submenu for entering and changing data. This structure is detailed below as well as being shown on the Program Instructions Card on the control module itself.

MAIN MENU	SUBMENUS
OPERATIONS	- Manual - Auto Slot / Station - Rain Off Days - All Manuals Off - All Autos Off - Station Days Off
UTILITY	- Time & Day - Day Change Hour - Unit Code - Station Count - Program Clear - N/O Master - Two-Wire / Irritrol Mode
ALARMS	- Master Minimum - Unexpected Flow - Over Flows - Over Currents - Clear Flow Alarms - Clear Fuse Alarms - Clear Map Alarms - Clear Power Fail
FLOW	- K Factor - Offset Factor - Current Flow - Expected Flows - Maximum Flows - Flow Processing - Read Flow Totals
SCHEDULE DATA	- Run Days - Schedule Length - Clear Schedule
PROGRAM DATA	- Start Times - Slot-Station-Time - Percent Scale - Repeats - Repeat Delay time - Continuous Run - Water Window - Assigned Schedule
ZONE / ET DATA	- Plant Factor - Precipitation Rate - Default ET - Program ET Toggle - Maximum ET - Station Type - Map Stations
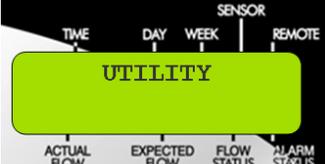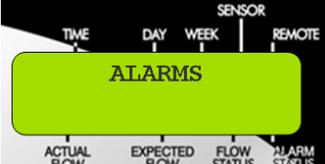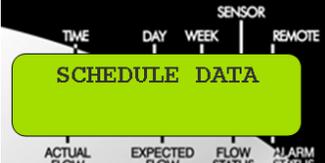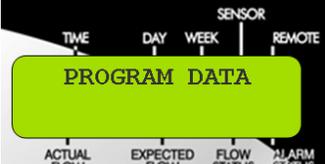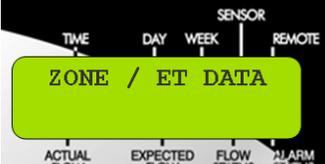
NAVIGATION

- To enter the Main Menu from this default screen, you need to hit any of the arrow keys on the keypad: 🔼, 🔽, ◀, or ▶. This will bring up the **OPERATIONS** option of the Main menu.
- To navigate through the Main Menu, use the right or left arrow keys: ◀ or ▶.
- To enter a submenu for any of the Main menu options, use the up or down arrow keys: 🔼 or 🔽.
- When the desired submenu is reached, press the enter key ⏎ to view or change data in the submenu.

IMPORTANT: When entering data into one of the submenus, the controller is in the Edit Mode. The controller will not begin any scheduled operation until you have exited the Edit Mode. Programs that are running prior to entering the Edit Mode will continue running. Any time you enter or change any data, you must press the **ENTER key** to save the data. Otherwise, the newly entered data will not be saved.

To exit the Edit Mode, press the **ESC key** (Escape Key) once or twice as necessary to return to normal mode (default) screen. If you forget to press the ESC key, the controller will automatically revert to normal mode after two minutes.

SETTING CURRENT TIME & DATE

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 **Time & Day** is displayed in the screen
3. Press the **Enter Key** to view the Time & Day entry screen.
4. Position the cursor using the Right and Left Arrow Keys under the value being edited and use the keypad to set the time, date, and week number. **Enter the current time, date, an set as W1 (Week 1)**.
5. Press **ENTER Key** to Save.
6. Pres **ESC Key** twice to return to Default screen.

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. Pres **ESC Key** twice to return to Default screen.

MANUAL [SINGLE] STATION OPERATION

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 **OPERATIONS** is displayed in the screen.
2. Press the **Down Arrow Key** until **Manual** is displayed in the screen
3. Press the **Enter Key** to view the Manual Operations screen.
4. Press the **Up Arrow Key** to display the **Station** that you want.
5. Press the **ON/YES Key** to turn the displayed station on.
6. The default manual time is 30 minutes. If a different time is desired: Press the **Right Arrow Key** and enter the **desired runtime** using the **numeric keypad**.
7. Press **ENTER Key** to set new manual runtime.
8. To turn the station off, press the **OFF/NO Key.**
9. Press the **ESC Key** twice to return to Default screen.

MANUAL PROGRAM OPERATION

Note: Sentinel Controllers have 16 Programs. These Programs are divided into 4 Groups (Clusters A, B, C, & D) with 4 Programs, each. Program Designation follows the following Format: Cluster X, Program Y = CXPY where X can be A, B, C, or D and Y can be 1-4.

CAP1	CAP2	CAP3	CAP4	CBP1	CBP2	CBP3	CBP4	CCP1	CCP2	CCP3	CCP4	CDP1	CDP2	CDP3	CDP4
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

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 **OPERATIONS** is displayed in the screen.
2. Press the **Down Arrow Key** until **Auto Slot / Station** is displayed in the screen.
3. Press the **Enter Key** to view the Auto Slot / Station Screen.
4. Press the **CLUSTER / SCHEDULE SELECT Key** and the **PROGRAM SELECT Key** to choose the Cluster and Program # to start.
5. Press the **ON/YES Key** to turn the displayed program on. *Note:* The program will start at the top of the next minute.
6. To turn the program off, press the **OFF/NO Key.**
7. Press the **ESC Key** twice to return to Default screen.

CHANGE WATERING (RUN) DAYS

Note: *Before Editing Run Days, verify in controller default screen what current week of 6-week schedule is. If current week is Week 6 (W6), then Week 1 will be next week (looping 6-Week Schedule).*

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 **SCHEDULE DATA** is displayed in the screen.
2. Press the **Down Arrow Key** until **Run Days** is displayed in the screen.
3. Press the **Enter Key** to view the Run Days Edit Screen.
4. Press the **Up Arrow Key** to Select the Week (1-6) you want to edit.
5. Press the **Right Arrow Key** so the cursor is on the Day.
6. Press the **Up Arrow Key** to Select the Day of The Week.
7. Use the **ON / YES Key** to make that day a watering Day or use the **OFF/ NO Key** to make that Day a non-watering day.
8. Make desired changes for all 6 weeks of the schedule.
9. Press the **ENTER Key** to save changes.
10. Press the **ESC Key** twice to return to Default screen.

CHANGE START TIMES

Note: *Each of the 16 Programs can have up to 8 Start Times.*

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 **PROGRAM DATA** is displayed in the screen.
2. Press the **Down Arrow Key** until **Start Times** is displayed in the screen.
3. Press the **Enter Key** to view the Start Times Edit Screen.
4. Press the **CLUSTER / SCHEDULE SELECT Key** and the **PROGRAM SELECT Key** to choose the Cluster and Program # to edit.
5. Press the **Up Arrow Key** to Select the Start Time (ST 1-8) to enter or edit.
6. Press the **Right Arrow Key** to move the Cursor to the Time.
7. Use the **Numeric Keypad** to enter the Start time and the **Up** or **Down Arrow Key** to select AM or PM.
8. Press the **ENTER Key** to save changes.
9. Press the **ESC Key** twice to return to Default screen.

CHANGE STATION RUNTIMES

Note: *Each of the 16 Programs has 48 station positions called "Slots." Each Slot can have a station and a runtime.*

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 **PROGRAM DATA** is displayed in the screen.
2. Press the **Down Arrow Key** until **Slot-Stn-Time** is displayed in the screen.
3. Press the **Enter Key** to view the Slot Edit Screen.
4. Press the **CLUSTER / SCHEDULE SELECT Key** and the **PROGRAM SELECT Key** to choose the Cluster and Program # to edit.
5. Press the **Up Arrow Key** to Select the Slot to enter or edit.
6. Press the **Right Arrow Key** to move the Cursor to the Station.
7. Press the **Up Arrow Key** to Select the Station to add runtime for in that Slot..
8. Press the **Right Arrow Key** to move the Cursor to the Runtime.
9. Use the **Numeric Keypad** to enter the station runtime (H:MM)
10. Press the **ENTER Key** to save changes.
11. Press the **ESC Key** twice to return to Default screen.

RAIN OFF DAYS

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 **OPERATIONS** is displayed in the screen.
2. Press the **Down Arrow Key** until **Rain Off Days** is displayed in the screen.
3. Press the **Enter Key** to view the Rain off Days Edit Screen.
4. Press the **CLUSTER / SCHEDULE SELECT Key** and the **PROGRAM SELECT Key** to choose the Cluster and Program # to turn off.
5. Use the **Numeric Keypad** to enter the number of Rain Days that you want that program to be off for.
   Note: *Today is Day 1, so if 1 day is entered, irrigation will be allowed to commence after midnight.*
6. Press the **ENTER Key** to save changes.
7. Press the **ESC Key** twice to return to Default screen.

**For Additional Information on Sentinel Controller Programming,
refer to the Sentinel Controller User Guide.**