



Count on it.

TDC+ CONTROLLER

Programming Guide

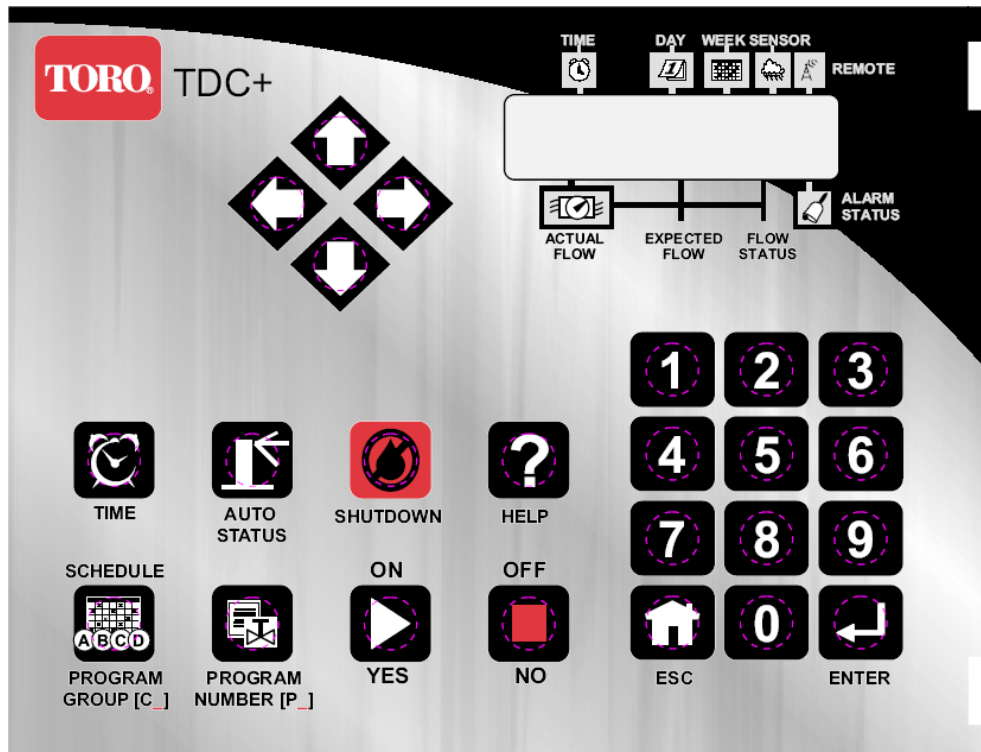


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CHAPTER 1: BASIC CONTROLLER PROGRAMMING

This Programming Guide assumes that Basic Controller Setup (Unit Code, Two-Mode, Decoder Addressing, etc) has occurred per the TDC+ Startup Guide.

NOTE: Toro CDEC Decoder Addresses are Alphanumeric. If the user changes out a decoder (due to failure), the new decoder address must be programmed into the controller utilizing the Sentinel Lite software.

This section will provide the information on how to set or adjust basic irrigation programming (from the TDC+ faceplate). The following Menus and Submenu items will be used in this programming:

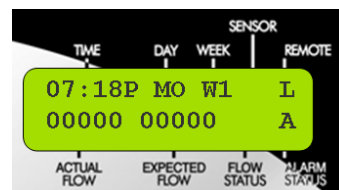
<i>Menu</i>	UTILITY	SCHEDULE DATA	PROGRAM DATA
<i>Submenu</i>	<ul style="list-style-type: none"> • Time & Day • Day Change Hour • Station Count • Master Valve 	<ul style="list-style-type: none"> • Run Days • Schedule Length 	<ul style="list-style-type: none"> • Start Times • Slot-Station-Time • Percent Scale • Repeats • Repeat Delay Time • Continuous Run • Water Window • Assigned Schedule

I. CONTROLLER SETUP

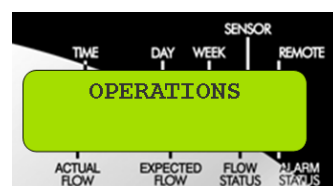
- Time & Day
- Day Change Hour
- Station Count
- Master Valve


UTILITY → Time & Day → Edit Mode

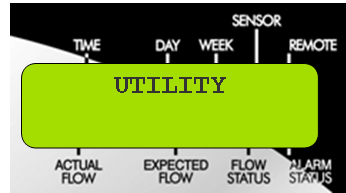
The controller setup functions are accessed through the Utility Menu. When starting from the normal mode (default screen) as shown below:




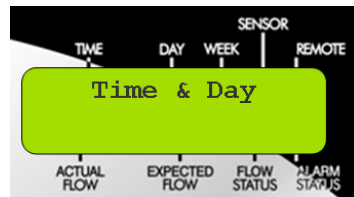
Hit any of the Arrow Keys (←, →, ↑, or ↓), once. This should bring up the Main Menu on **OPERATIONS**:




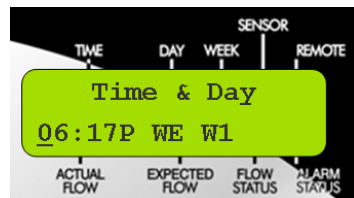
Hit the Right Arrow Key () , once to bring up the **UTILITY** menu:







Hit the Down Arrow () , once to access the Utility Submenu and the first submenu option of **Time & Day**:







Hit Enter () to access the Time & Day Edit Mode:



You are now in the Edit Mode and can change the Time, Day, and Schedule Week in the controller. As in the example display above, the first digit of the hour should have the cursor under it, indicating you can change this value. Use the Numeric keys to change the Time. The cursor will automatically advance to the next digit, or you can use the Right and Left Arrow keys (, ) , to move the cursor.

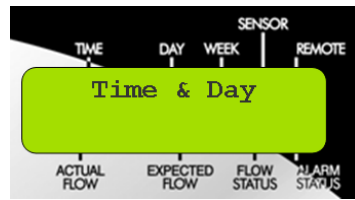
Use the Up or Down Arrow keys (, ) to change from AM (A) to PM (P) as necessary, when the cursor is on the A/P.

Use the Up or Down Arrow keys (, ) to change the Day of the week when the cursor is on the day.

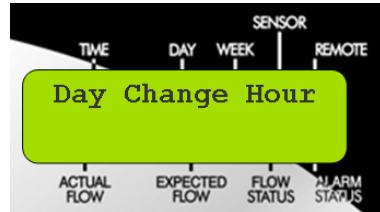
Use the Up or Down Arrow keys (, ) to change the Week (schedule week) when the cursor is on the week position. When initially programming the controller, set it to Week 1 (W1).

When all changes are made, hit the ENTER key () to save changes.

Hit the ESC key (⏪) to exit to the Utility Submenu, Time & Day option:



Hit the Down Arrow (⏴), once to access the submenu option of **Day Change Hour**:

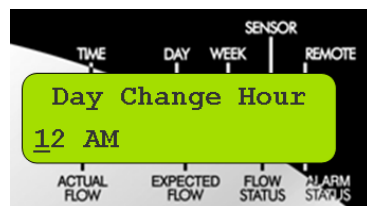


IMPORTANT: From this point forward in the User's Guide, we will not show step-by-step the navigation through the Main Menu and the Submenus and into the Edit Mode for each submenu. Navigation, editing, cursor movement, etc, works the same for all functions in controller programming.

Note: You must remember to hit ENTER (⏵) after changes have been made, or your changes will not be saved.

UTILITY → Day Change Hour → Edit Mode

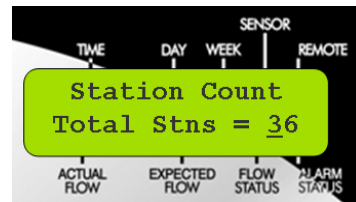
TDC+ allows you to choose the hour you want the controller to advance to the next day. As an example, the day would change from Monday to Tuesday at midnight. You can command the controller to wait until 8 AM Tuesday before it changes to Tuesday. This way, the controller will have until 8 AM Tuesday to finish all watering cycles on the Monday schedule.



To set the Day Change Hour, position the cursor under the item to be changed and edit as desired using the numeric keys on the keypad. Use the Up and Down Arrow keys (⏶, ⏴) for the AM/PM toggle field. Press the ENTER key (⏵) to save after editing.

UTILITY → Station Count → Edit Mode

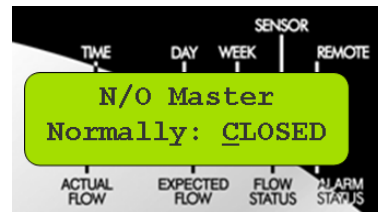
Use this menu to inform the controller the number of stations it has. The TDC+ controllers typically have station counts up to 204.



Use the Up and Down Arrow keys (↑, ↓) to scroll through the station count options and specify the number of stations in the controller. Press the ENTER key (↵) to save after editing.

UTILITY → N/O Master → Edit Mode

This menu item allows you to configure the master valve/pump start output for either normally open or normally closed operation.



Use the Up and Down Arrow keys (↑, ↓) to toggle between **Normally: CLOSED** and **Normally: OPEN** options. Press the ENTER key (↵) to save after editing.

II. SCHEDULE SETUP

- Schedule Length
- Run Days

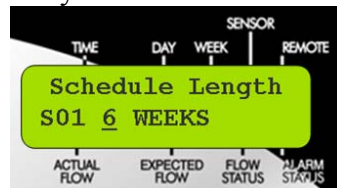
Schedule refers to the days of the week you want a program to run. Up to 16 unique watering day schedules can be defined in the TDC+ Controller. For identification, each schedule has a number assignment ranging from 1–16. In the Display of the controller, the schedules will be indicated by “S” and then the two-digit schedule Number (01, 02,... 16). For example, Schedule 12 would be shown as “S12.”

Each schedule has the option of being programmed based on either a six week schedule or a 365-day calendar. It is recommended that all schedule programming through the faceplate be accomplished using 6-week schedules. Utilizing a 365-day Calendar schedule will require the user to select the irrigation status for every day of the year (all days are default OFF).

Any schedule may have any combination of watering days and may be assigned to any of the sixteen programs (covered in Program Setup). You must assign a schedule to a program to activate it. If using a 6 Week Schedule, the current Schedule Week was set in Time & Day as part of controller 6 setup (example was set to W1). When the controller reaches the end of Week 6 (W6) it loops back and starts again with Week 1 (W1).

SCHEDULE DATA → Schedule Length → Edit Mode

Use this Submenu Edit Mode to select whether a Schedule (01... 16) is based on a 6-week calendar or a 365-day calendar:



The second line of the display indicates as follows:

S01 = Schedule 1
6 WEEKS = 6 Week Schedule

Use the SCHEDULE/PROGRAM GROUP [C_] key (🔑) to select the schedule desired (S01...S16). Use the Up or Down Arrow keys (⬆️, ⬇️) to select either 6 WEEKS or 1 YEAR for schedule length.

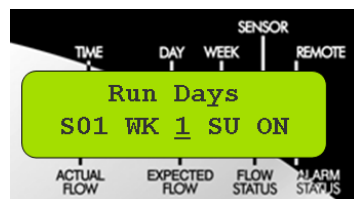
IMPORTANT: Changing the schedule length will clear the selected schedule.

Press ENTER (🔑) to save the Schedule Length.

NOTE: For the purposes of this manual, the programming example utilizes a 6 Week Schedule.






SCHEDULE DATA → Run Days → Edit Mode



Use this Submenu Edit Mode to configure the sixteen independent schedules (water days):








The second line of the display indicates as follows:

S01 = Schedule 1
WK 1 = Week 1 of Schedule
SU = Sunday
ON = On (active watering day)

Use the SCHEDULE/PROGRAM GROUP [C_] key () to select the schedule desired (S01...S16). Position the cursor using the Right and Left Arrow keys (, ) under the WK digit and use the Up or Down Arrow keys (, ) to select the week desired.

Position the cursor under the day of the week and use the Up or Down Arrow keys (, ) to select the weekday (SU, MO, TU, WE, TH, FR, SA) desired.

Position the cursor under the ON (or OFF) indication and use the OFF/NO or ON/YES keys (, ) or the Up or Down Arrow keys (, ) keys to designate the day as a watering day (ON) or a non-watering day (OFF).

Press ENTER () to save the status of the day. Continue this process to set up the entire schedule or to view the status of the other days.

As example, a Visual Representation of an every other day schedule follows:

	SU	MO	TU	WE	TH	FR	SA
WK1	ON	OFF	ON	OFF	ON	OFF	ON
WK2	OFF	ON	OFF	ON	OFF	ON	OFF
WK3	ON	OFF	ON	OFF	ON	OFF	ON
WK4	OFF	ON	OFF	ON	OFF	ON	OFF
WK5	ON	OFF	ON	OFF	ON	OFF	ON
WK6	OFF	ON	OFF	ON	OFF	ON	OFF

Summary:

16 Schedules: S01, S02,....S16

6 Weeks per Schedule: WK1, WK2, WK3, WK4, WK5, WK6



7 Days per Week: SU, MO, TU, WE, TH, FR, SA

If you did not set current week in Time/Day – go back and do it.

III. PROGRAM SETUP

- Start Times
- Slot-Station-Time
- Percent Scale
- Repeats
- Repeat Delay Time
- Continuous Run
- Water Window
- Assigned Schedule

TDC+ controllers have sixteen independent Programs. They are divided into four Controller Program Groups (CA, CB, CC, CD) with four Programs (1 through 4) within each Group. For example, Group A Program 3 (CAP3) is one program and Group C Program 3 (CCP3) is another. When you are entering or changing data, always make sure the desired Program is selected on the display. When needed in the Edit Mode, the

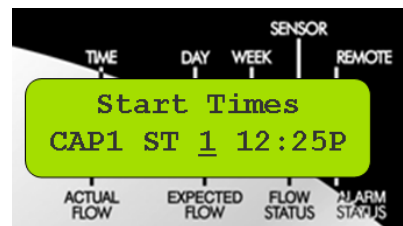
desired group and program can be selected by using the SCHEDULE/PROGRAM GROUP [C_] () key and the PROGRAM NUMBER [P_] () key.





PROGRAM DATA → Start Times → Edit Mode



A Start Time initiates the automatic watering cycle. Each program can be assigned to start up eight times within a 24-hour period.

Note: All start times must occur within the defined Water Window time frame. When multiple start times are used, they must be spaced far enough apart to enable the program irrigation cycle to be completed.

The controller offers eight start times per program. If more than eight start times are needed, see Repeats and Continuous Run below. Use this submenu item to display/edit any one of the eight start times.




Use the SCHEDULE/PROGRAM GROUP [C_] key () and the PROGRAM NUMBER [P_] () keys to select the desired group & program, respectively. Use the Left and Right Arrow keys (, ) to position the cursor under the field being edited and edit as desired.

Use the Up and Down Arrow keys (, ) to select the Start Time to edit (ST 1, ST2,... ST 8).

Use the Numeric Keys to set the time.

Use the Up and Down Arrow keys (, ) to toggle to the A (AM) or P (PM).

To eliminate a start time, press the OFF / NO key ()

Press ENTER () to save the Start Time.

PROGRAM DATA → Slot-Stn-Time → Edit Mode

One of the most unique and powerful programming features of the TDC+ Controller is the method used to organize and control station outputs within each irrigation program. This method is referred to as “Program Slots.” Program Slots are organized in a sequential matrix from Slot 1 to Slot 48, for a total of 48 slot positions.

The program operating sequence begins at Slot 1 and ends at Slot 48. Stations are assigned to a slot and given a run time duration ranging from 0 to 4 Hour and 15 Minutes. Station numbers range from 0 (inactive) to 204. Stations can be assigned to slots in any order and as many times as preferred (that is, one station can appear multiple times in the 48 Slots of one program, if desired).

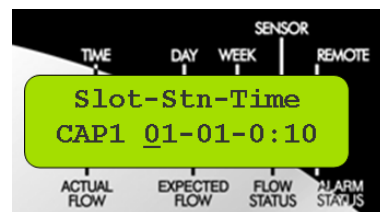
When an irrigation program is running, any slot with 0 (or blank) run time is ignored. A slot with an assigned run time duration ≥ 1 minute, but without a station assignment, will create a pause in the watering cycle for the assigned duration.

TDC+ programming allows you to reconfigure the operating order of the stations by enabling any station to be assigned to any slot.



Visually, the Slots can be represented in a matrix as follows:





Slot	Stn	Time	Slot	Stn	Time	Slot	Stn	Time	Slot	Stn	Time	Slot	Stn	Time
1			2			3			4			5		
6			7			8			9			10		
11			12			13			14			15		
16			17			18			19			20		
21			22			23			24			25		
26			27			28			29			30		
31			32			33			34			35		
36			37			38			39			40		
41			42			43			44			45		
46			47			48								

Slot-Stn-Time Submenu Edit Mode:



The second line of the display indicates as follows:
 CAP1 = Program Group A, Program Number 1
 01-01-0:10 = Slot 1 - Station 1 – 10 Minutes

From the factory, the Slot and Station numbers are set to be the same; i.e., Station 1 is assigned to Slot 1 and will run first. Station 2 will run next in Slot 2, etc. Use the SCHEDULE/PROGRAM GROUP [C_] key () and the PROGRAM NUMBER [P_] key () key to select the desired program.

Use the Right and Left Arrow keys (, ) to position the cursor under the slot field. Use the Up and Down Arrow keys (, ) to select the slot desired.

Use the Right Arrow key (→) to position the cursor under the Station field. Use the Up and Down Arrow keys (↑, ↓) to select the desired Station to run in the slot shown.

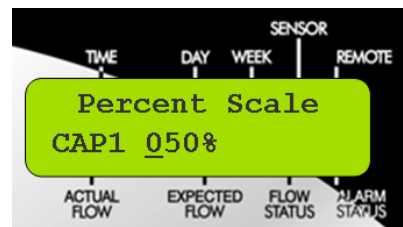
Press the Right Arrow key (→), again, to position the cursor under the time field. Enter the desired run time using the Numeric keys from 0:00 to 4:15 (4 Hours and 15 Minutes)

Press ENTER (↵) to save the Slot details. Continue this process to set up all the Slots or to view the status of the other Slots.

Note: This feature (The Slots in a Program) allows the user to run any station in any order desired and even repeat the desired station within the same program. Keep in mind that the controller will run the slots sequentially. Stations can be assigned to slots allowing any order of programming.

PROGRAM DATA → Percent Scale → Edit Mode

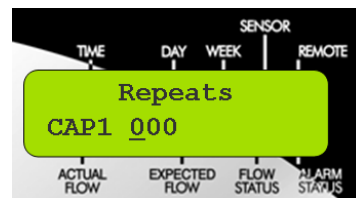
Percent Scale Adjusts the run time of all stations assigned to the program by percentage ranging from 0 to 255% (100% = no change).



Use the SCHEDULE/PROGRAM GROUP [C_] (C) and the PROGRAM NUMBER [P_] (P) keys to select the desired program. Position the cursor under the field being edited and edit as desired. Press ENTER (↵) to save.

PROGRAM DATA → Repeats → Edit Mode

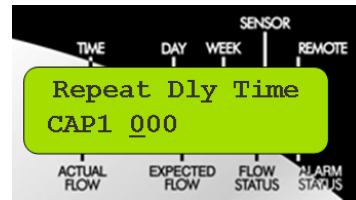
Repeats enables the watering cycle to be repeated from 1 to 250 times per start time.



Use the SCHEDULE/PROGRAM GROUP [C_] (C) and the PROGRAM NUMBER [P_] (P) keys to select the desired program. Position the cursor under the Repeat field and edit as desired. Press ENTER (↵) to save.

PROGRAM DATA → Repeat Dly Time → Edit Mode

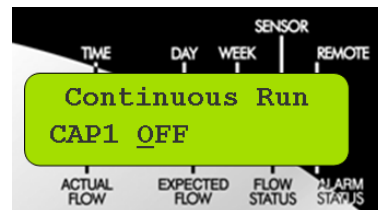
Repeat Delay Time places a delay period, ranging from 0 to 255 minutes, between program repeats. Use this menu item to display/edit the repeat delay time for any one of the 16 programs.



Use the SCHEDULE/PROGRAM GROUP [C_] (📅) and the PROGRAM NUMBER [P_] (📄) to select the desired program. Position the cursor under the field to be edited and edit as desired. This is used in conjunction with Repeats above. Press ENTER (↵) to save.

PROGRAM DATA → Continuous Run → Edit Mode

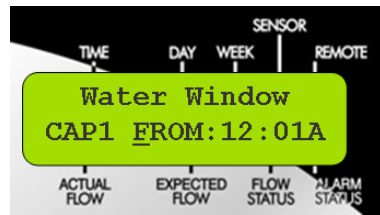
Selecting Continuous Run will automatically repeat the program cycle continuously for the defined Water Window duration.



The controller is capable of running any one or combination of programs continuously. To manually start the desired program, use the same procedure as in Auto Slot/Stn. Use the SCHEDULE/PROGRAM GROUP [C_] (📅) and the PROGRAM NUMBER [P_] (📄) keys to select the desired program. Use the ON and OFF (🔴, ▶) keys to turn continuous run on and off. Press ENTER (↵) to save. Use Water Windows below to set up continuous run start and stops automatically.

PROGRAM DATA → Water Window → Edit Mode

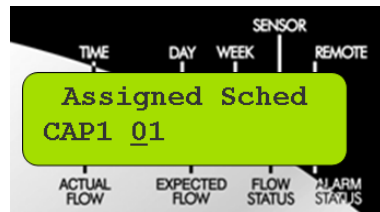
The Water Window is the period of time in a 24-hour day that automatic watering can occur. Selecting a **From** and **To** time defines the Water Window start time, duration and end time. A program that is running at the end of the Water Window is automatically terminated.



Use the SCHEDULE/PROGRAM GROUP [C_] (📄) and the PROGRAM NUMBER [P_] (📄) keys to select the desired program. Position the cursor under FROM or TO and toggle using the Up and Down arrow keys. Use the Right and Left arrow keys to position the cursor under the time digit to be edited and edit as desired. Use the Right arrow key to place the cursor under the A (AM) or P (PM) field. Press ENTER (📄) to save. Pressing the OFF key will clear the water window entry. Press ENTER (📄) after any change to save.

PROGRAM DATA → Selected Schedule → Edit Mode

Up to 16 unique watering day schedules can be defined in the controller. For identification, each schedule has a number assignment ranging from 1–16. Each program must be assigned a schedule in order to run.



Use the SCHEDULE/PROGRAM GROUP [C_] (📄) and the PROGRAM NUMBER [P_] (📄) keys to select the desired program. Use the Right and Left arrow keys (📄, 📄) to position the cursor under the field to be edited and edit as desired. Use the Up and Down arrow keys (📄, 📄) to select from schedule 1–4. Press ENTER (📄) after any change to save.

Visually, the information and data input into a program includes the following:

GROUP: A B C D PROGRAM: 1 2 3 4											
START TIMES 1. ____ : ____ AM / PM 2. ____ : ____ AM / PM 3. ____ : ____ AM / PM 4. ____ : ____ AM / PM 5. ____ : ____ AM / PM 6. ____ : ____ AM / PM 7. ____ : ____ AM / PM 8. ____ : ____ AM / PM				PERCENT SCALE _____ %				ASSIGNED SCHEDULE _____ (1-16)			
				REPEATS # of Repeats _____ Repeat Dly Time _____				CONTINUOUS RUN Yes / No			
				WATER WINDOW From: ____ : ____ AM / PM To: ____ : ____ AM / PM							

SLOT-STATION-TIME (Slot-Stn-Time)

Slot	Stn	Time	Slot	Stn	Time	Slot	Stn	Time	Slot	Stn	Time	Slot	Stn	Time
1			2			3			4			5		
6			7			8			9			10		
11			12			13			14			15		
16			17			18			19			20		
21			22			23			24			25		
26			27			28			29			30		
31			32			33			34			35		
36			37			38			39			40		
41			42			43			44			45		
46			47			48								

IMPORTANT! At this point, you have completed the required steps for Automatic Irrigation to occur. The remaining instructions in this user guide deal with advanced operations and functionality not yet covered.

CHAPTER 2: ADVANCED PROGRAMMING

This section covers Menus and Submenus not covered as part of Basic Programming.

I. OPERATIONS MENU

- Manual
- Auto Slot / Station
- Rain Off Days
- All manuals Off
- All Autos Off
- Station Days Off

Manual (Manual Station)

To manually operate stations, select Manual and press ENTER. Use the Up or Down arrow key to select the desired station number. Use the ON/YES key to turn the station On and the OFF/NO key to turn the station Off. A 30 minute run time is automatically set for the selected station. To change the run time, position the cursor using the Left or Right arrow key under the digit you wish to change, use the number keys to select the desired time (1 minute to 4 hours and 15 minutes), then press ENTER. You can repeat this procedure to run up to six stations at one time. When finished, press the ESC key twice.

***Note:** Exceeding the maximum allowable output current when turning on multiple stations will cause the controller to automatically turn off the station that caused the condition and flag the station so that it will not run again. This is a safety feature that prevents an over-current condition from exceeding the output capacity of the satellite. If the station is checked and found to be electrically safe, remove the disable flag through the Over Currents (Alarms) menu item.*

Auto Slot/Stn (Manual Program Start)

Auto Slot/Station - To manually start or stop any program, open the Auto Slot/Stn menu. Use the SCHEDULE/PROGRAM GROUP [C_] and the PROGRAM NUMBER [P_] keys to choose the desired program want to run. You may start the program from any slot. It will start with Slot #1 unless you choose otherwise. Use the Right and Left arrow keys to maneuver to the slot field in the display. Use the Up and Down arrow keys to select the desired slot. Use the Left arrow key to place the cursor under the ON/OFF status. Use the Up or Down arrow keys to toggle the program status. When the ON/OFF status of the program(s) have been changed as desired, press the ENTER key to confirm. Press the ESC key twice to exit the Edit mode and allow the internal computer to change the program status. Allow up to 60 seconds for the changes to take effect.

***Note:** To stop the manually started Program, use the “All Autos Off” function under the OPERATIONS Menu. The “All Manuals Off” function stops only stations individually manually started, not stations started as part of a program.*

Rain Off Days

This menu item allows you to disable any program for a specific number of days. Select the Rain Off Days menu using the Right and Left arrow key. Use the SCHEDULE/PROGRAM GROUP [C_] and the PROGRAM NUMBER [P_] keys to select the desired program. Use the Right and Left arrow keys to place the cursor under the digit being changed (the number of days you want to activate rain shut down). Use the number keys on the keypad to edit the digit as desired. Press the ENTER key to save the new rain day value.

All Manuals Off (Manual Stations Off)

Selecting this from the menu system provides a quick way to turn off any stations that have been turned on manually without having to select each station individually. If more than one manual station is on, the controller will turn off one station at a time every five seconds to prevent the possibility of water hammer. Select All Manuals Off from the main menu using the Right and Left arrow key. Press ENTER to activate.

All Autos Off (Manual / Auto Programs Off)

Selecting this menu item will provide an automatic method to turn off any automatic programs (or manually started programs) that may be running. To activate, select this item from the main menu and press ENTER. One program will be shut down every five seconds. The display will show DONE when the process is complete.

Stn Days Off

Station Days Off - Selecting this menu item allows you to disable individual stations for the number of days desired. Choose Stn Days Off from the main menu. Select the station number by placing the cursor under the station number. Specify the amount of days off by entering it under the three digit rain days. Press the ENTER key to save the new value. The rain days will automatically decrease by one each day until the days off is zero. The station will then resume normal operation.

II. UTILITY MENU

- Program Clear
- Wireless Group
- Map Unit Precode
- Two-Wire / Irritrol Mode

Program Clear

This menu allows you to set all of the slot/station times within a selected program to zero. Select the Program to be cleared using the SCHEDULE/PROGRAM GROUP [C_] and the PROGRAM NUMBER [P_] keys. Clear the selected program by toggling to ON and pressing the ENTER key. This function is helpful when clearing all 16 programs.

Manually clearing the station times in all 16 programs can be time consuming without this option.

Two-Wire / Irritrol Mode

The default/standard setting for this option is OFF. This option should be set to ON for a TDC+ controller as a Two-Wire system. Press ENTER to save your selection.

III. FLOW MENU

- K factor
- Offset Factor
- Current Flow
- Expected Flows
- Maximum Flows
- Flow Processing
- Read Flow Totals

Note: If a flow meter is connected to the satellite sensor terminals, the controller will read and react to flow.

K Factor

This menu allows you to enter/edit the K factor associated with the flow metering device being used. The K factor may be found in the specification sheet for the flow meter. Edit the K factor by positioning the cursor under the desired digit and using the number keys of the keypad. Press ENTER when editing is complete.

Offset Factor

This menu allows you to enter/edit the Offset Factor associated with the flow metering device. The offset factor may be found in the specification sheet for the flow meter. Edit the offset factor by positioning the cursor under the desired digit and using the number keys of the keypad. Press ENTER when editing is complete.

Current Flow

Selecting this menu item will display the current flow meter reading in gallons per minute. Press ENTER to update the display as often as desired.

Expected Flows

This menu allows you to enter/edit the Expected Flow values (in gallons per minute) for individual stations. Use the Up and Down arrow keys to select stations and the Right and Left arrow keys to position the cursor under the digit being edited. Edit as desired and

press ENTER to save the flow value. The controller will use expected flow values to calculate and provide a display of expected flow next to the actual flow in the controller display.

Expected flow values will be displayed even if there is no flow meter to collect and read actual flow values.

Maximum Flows

This menu allows you to specify/enter the maximum flow values in gallons per minute for each individual station. Use the Up and Down arrow keys to select the station and the Right and Left arrow keys to position the cursor under the digit being edited. Edit as desired and press ENTER to save the flow value. The maximum flow may be obtained (as a suggestion) by adding a percentage to the expected flow value. The percentage added will vary with system design, size and personal preferences. This maximum flow value will be used by the controller to check for flow-violating stations and to prevent their operation if an unacceptable flow condition occurs.

Flow Processing

This menu allows you to turn the flow processing functions off or on. After choosing this menu, toggle the Up or Down arrows to off or on and press ENTER.

Note: Do not turn on flow processing if it is not properly set up.

Read Flow Totals

To look at the current month's water usage, previous month's water usage or the previous year's water usage. Select Read Flow Totals from the menu and toggle the Up and Down arrows and the Left and Right arrows to view the desired information.

IV. ALARMS MENU

- Master Minimum
- Unexpected Flow
- Over Flows
- Over Currents
- Clear Flow Alarms
- Clear Fuse Alarms
- Clear Map Alarms
- Clear Power Fail

Note: The controller is capable of posting alarms when it detects excessive water flow or excessive current.

Master Minimum

Selecting this menu item will display the status of the minimum flow alarm. The normal status of this flag is off. It may be toggled on or off by using the Up and Down arrow keys. If this flag displays ON, there has been a minimum flow alarm. Correct the problem and set the flag to OFF. The minimum flow is necessary when the pump station requires a minimum flow for cooling purposes. This alarm will turn off the master output to save the pump from damage. The programs will continue to run. This alarm is operated by the central system.

Unexpected Flow

Selecting this menu item will display the status of the unexpected flow alarm. The normal status of this flag is off. It may be toggled to on or off by using the Up and Down arrow keys. If this flag displays ON, there has been an unexpected flow condition. Correct the problem if necessary and set the flag to OFF. This flag is set when the controller detects flow while no station is running in the field controller.

Over Flows

Selecting this menu item will display the flow alarm status of the individual stations. There must be a flow meter installed at the data retrieval port on the controller for this feature function. If flow values have been properly set, the controller will watch the flow as programs run. If there is a problem with a station such as broken line, broken heads, etc., the controller will set the alarm for that station. If there are numerous stations running at any one time and there is a flow problem with one station, the controller will shut down the stations one at a time and check flow. This process will continue until the malfunctioning station or stations are detected and disabled. Other stations that were running will return to normal operation one at a time.

Use the Up and Down arrow keys to step through the stations and view or edit the ON or OFF status of the flow alarms. The normal status is OFF. If the alarm status of a station is ON, the station will not run in automatic mode.

Clear the alarm by selecting the desired station and pressing the OFF key. A station may be disabled or eliminated from auto operation by manually turning the alarm status to ON. This is useful if the station is in need of repair or if disabling is desired for a single station.

Note: Disabling a station by setting its alarm status to ON does not change the length of time a program runs. The program will still reserve a time slot during operation, but will not energize the station.

Over Currents

Selecting this menu item will display the over current status of individual stations. Over current alarms are set to ON if a station has an electrical problem that can cause a fuse to blow if allowed to continue running. The status of the over current alarms may be changed by selecting the desired stations and pressing the ON/OFF keys.

Even when a station has been electrically disabled, the time management is left in the control of the operator.

Note: Over current protection does not operate while in the Edit mode.

Clear Flow Alarms

Clear Flow Alarms - Selecting this menu allows global clearing of all flow alarms on all stations. Pressing ENTER will execute the command and display WAIT. When the alarms are cleared, DONE will be displayed. Normal program operation will then resume.

Clear Fuse Alarms

Clear Fuse Alarms - Selecting this menu item allows global clearing of all fuse alarms on all stations. Pressing ENTER will execute the command and display WAIT. When the alarms are cleared, DONE will be displayed. Normal program operation will then resume.

Clear Map Alarms

Select this option to clear all remote output alarms. This includes all mapped output communication alarms. They may be MapTo Universal, Two-Wire, or wireless outputs. Pressing ENTER will execute the command and display WAIT. When the alarms are cleared, DONE will be displayed. Normal program operation will then resume.

Clear Power Fail

Clear Power Failure - Selecting this menu item allows clearing of the power failure alarm. Whenever power is lost, the power failure alarm is activated. Select Clr Power Fail from the menu and press ENTER to clear the alarm.

V. ZONE / ET DATA MENU

- Plant Factor
- Application Rate
- Default ET
- Program ET Toggle
- Maximum ET
- Station Type
- Map Station

Note: The controller is capable of running irrigation programs based on ET (evapotranspiration). When the ET functions are activated, the controller automatically adjusts program run times according to the ET data. A weather station or ET gauge needs to be connected to the sensor input terminals of the controller or at the central to provide ET data.

Plant Factor:

This menu item enables you to assign a percentage factor to any zone for the type of plant material that the zone is irrigating. For instance, you may assign a bluegrass turf zone a factor of 100% and a ground cover zone that needs less water a 50% factor. Use the Up and Down arrow keys to get to the station desired. Use the Right arrow to place the cursor under the percentage field and edit as desired. Press ENTER to save.

Application Rate:

This is the amount of water a zone applies in inches per hour. For example, a zone of fixed spray heads may apply the water at the rate of 2" per hour while a rotary sprinkler zone may apply water at the rate of 0.50" per hour.

You can determine a zone's application rate by multiplying its gallons per minute by 96.3 and dividing that figure by the square feet covered by the zone. To enter the application rate, use the Up and Down arrow keys to get to the station desired.

Use the Right arrow key to move the cursor under the application rate field and edit the data. Press ENTER to save.

Default ET

This is the minimum ET figure (in inches) that is used as the default ET regardless of the weather conditions or if data is missing from the ET gauge or weather station. ET can vary depending on the time of the season and weather. Generally, daily ET can be from 0.00" to 0.50". Use the Up or Down arrows to toggle the value up or down. Press ENTER to save.

Program ET Toggle

Set to ON for any programs you wish to run based on ET values, for time-based watering set to OFF.

Maximum ET

Set this to the maximum ET value that can be accumulated between watering days. This value is the maximum value that a program will ever replace in a single day. Typically choose a value that is your maximum daily ET multiplied by the number of days between watering.

Station Type

The TDC+ Controller Station type should be set to:TORO-2WD

Map Stations

The TDC+ Firmware Map Stations menu item is in the form of:

SSS -> AAA/BBB:CC

Each station can be mapped, or associated with other hardware by way of the 8 numbers to the right of the arrow. The fields labeled SS are the TDC+ Station to be mapped (01-204). The rest of the fields depend on the station type selected:

TORO-2WD (Toro Two-Wire for use with TDC+):

Set AAA/BBB = 0xx/xxx where x is the 5 digit decoder address

Set CC = decoder output number 01-04

Note: Alpha-numeric Decoder Addresses must be programmed into the controller utilizing Sentinel Lite software.

VI. SCHEDULE DATA MENU

- Run Days
- Schedule Length
- Clear Schedule

Clear Schedule

Each Schedule (S01... S16) can be cleared by selecting the appropriate schedule. The "clear" can set the selected schedule to either all days ON or all days OFF. Toggle between OFF and ON using the UP or DOWN arrow keys. Select ENTER to clear the Schedule.

